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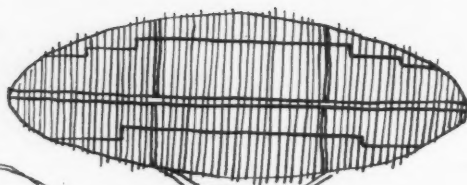
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HORIZONTAL PLANE**



DATA is a monthly reference book for use by weapons systems government contractors, procurement officers, and military commanders.

DATA editorial content each month includes . . .

- . . . a complete **DATA** report on a different Government activity with funding, operational requirement information, "Who's Who" personnel locator directories, **DATAGRAF** chain-of-command charts, and presentations of activity movement.
- . . . a **DATALOG** of all military missiles, space programs, and detection projects.
- . . . a fast-reading **DATAGRAM** newsletter which digests and capsulizes news from the Military Services, technical journals, manufacturers, and other R&D sources.
- . . . a **WASHINGTON REPS' REPORT** to keep military leaders abreast of contractor thinking.
- . . . an **INTERPRETIVE DATA** section to analyze and review the trends in Government R&D.

DATA is a unique non-technical professional publication which cuts a horizontal plane through the entire government research and development spectrum for diversified industry leaders and high-ranking government executives.

DATA MAGAZINE 1960 SCHEDULE

Jan.	ARDC
Feb.	Bureau of Naval Weapons
Mar.	NASA
Apr.	Navy Supply System
May	Army Ordnance
June	Air Materiel Command
July	Navy ASW Program
Aug.	Navy Astronautics Program
Sept.	Army Signal Corps
Oct.	Army R&D Program
Nov.	Mutual Security (ICA) Program
Dec.	Dept. of Defense

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Editor & Publisher:
MURRAY QUEEN SMITH

Feature Editorials:
MARTIN CAIDIN

DATAGRAM Editor:
MISS JUDY MURPHY

Business Manager:
RYAN J. ARATA

Circulation & Service Manager:
MISS HELEN RODIN

Layout:
HOMER STEVENS
B. HILLERMAN

Guest Editor:
MAJOR JIM GIBNEY, Public Information
Officer, ARDC.

ARDC Contributors:
LT. GENERAL
BERNARD A. SCHRIEVER
COLONEL "PUG" EVANS
MR. DICK FEHR

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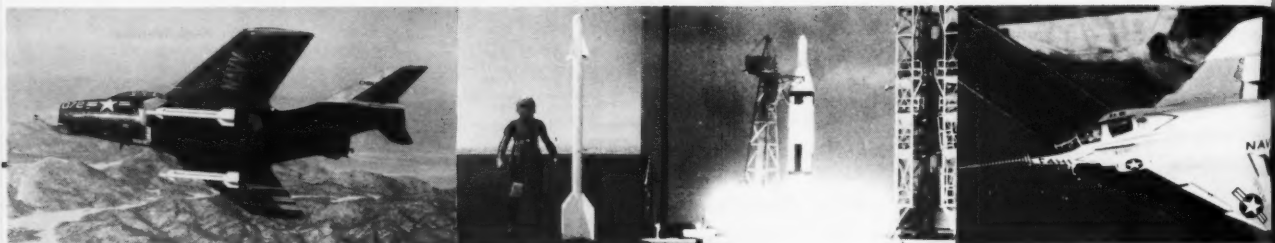
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NEXT MONTH IN DATA

The February 1960 edition of DATA will feature the NAVY BUREAU OF NAVAL WEAPONS. We appreciate the cooperation of Commander Russ Bufkins of Navy Magazine and Book and the interest of BuWeps Deputy Director Rear Adm. William Schoech in helping us get out this BuWeps issue.

DATA/JANUARY 1960 5

BU WEAPONS



**DATA'S FEBRUARY 1960
EDITION**

DID you know that 70 percent of the Navy's R&D budget will be spent in the new Navy Bureau of Naval Weapons? The new Bureau combines the Bureau of Aeronautics and the Bureau of Ordnance into one solid force for the forging of the weapons of naval readiness.

DATA's special issue highlighting the Bureau of Naval Weapons will be the most complete treatise yet made on "BuWeps" and will be an issue that Defense-Industry, Naval Officers, and other executives interested in Naval Strength and National Security will want to keep and refer to time after time throughout the year.

You'll get to know names like Morrie Hirsch, Bill Schoech, and Paul Stroop a lot better through this "BuWeps" issue of DATA. And these fine officers and their executive assistants and working level forces will be in this issue along with their room numbers and phone extensions wherever available in chain of command block diagram.

This "BuWeps" issue will be the biggest and most complete book on a given Government activity that DATA has ever done. We wish to thank Rear Admiral Schoech, Deputy Director of the Bureau, and Commander Russ Bufkins, the Navy's Magazine and Book Branch Director, for making this issue possible.

Here is a reference book we are proud to present that will be seen time and time again by all concerned with naval readiness.



Deadline for advertising copy and layout in this Bureau of Naval Weapons issue has been extended to the 29th of January. Don't miss getting your ad in this reference book.

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Businessmen in Defense-Industry Answer DATA Questions . . .

THE WASHINGTON REP REPORTS

QUESTION:

A recent directive from the Secretary of Defense cut back the supersonic B-70 bomber project. What is your opinion of this cut-back decision?

Mr. Harold E. Pryor
District Engineering Manager
Janitrol Aircraft Division
4606 East-West Highway
Washington 14, D.C.

I was quite concerned when I read of the B-70 cut-back, and it merely confirmed the feelings that I had when the F-108 airplane was cancelled. That is, *that the Air Force is going out of the airplane business as far as offensive weapons are concerned.* It seems to me that we are putting all of our eggs in the missile basket, and even in the face of the fact that *practically none of these missiles can be called truly operational.* I think that we are ignoring the interim period between the B-52 and the operational ICBM, unless we develop an airplane like the B-70, or even better, a nuclear bomber.

Congressman Overton Brooks (D-La.)
Chairman of the Science and Astronautics Committee
and former Vice Chairman of the Armed Services Committee

I am deeply disturbed to hear about the cancellation of the B-70 program. I realize that we are moving in the direction of missiles and away from manned planes but the B-70 seemed to me to be a necessary and useful part of our defense set-up. *I intend to find out why this was done and whether anything might yet be done to activate this program.*

Mr. R.A. Sweet
Washington Manager
Bendix Computer Division
1000 Connecticut Ave., N.W.
Washington 6, D.C.

I realize the Defense Department has tough decisions to make and I am willing to rely on their judgement about these matters. I know they tried to consider the picture from many angles before coming to a decision. And, if the financial end of things get involved, I realize that things like this are inevitable in giving consideration to the total defense picture.

Mr. Norman C. Witbeck
Cleveland Pneumatic Industries
1626 L Street, N.W.
Washington 6, D.C.

Until such time as the operational readiness of missile systems such as the ATLAS, TITAN, and MINUTEMAN has been *more clearly demonstrated*, it would appear desirable to maintain the "mixed force" concept. Delaying the B-70 seems to be a step away from this concept.

Mr. L.L. Nicholson
Collins Radio Company
429 Universal Building
Washington 9, D.C.

B-70 cut was a very wise decision.

Mr. Joseph F. Kelly
Atomic Seapower Development
1000 Vermont Ave., N.W.
Washington 5, D.C.

The cut-back on the supersonic B-70 bomber project is **WRONG, severe, and ill timed** according to the present rate of development on the various missile projects.

Any cut-back on conventional weapons should be determined on missile break through and when the missile program is on a production basis. *Any cut-back should be finalized with the military approval service by service.*

A good military defense posture will always protect a good budget — first comes the defense, the security of our nation.

Mr. Carroll W. Hayes
Celanese Corporation
1026 - 17th Street, N.W.
Washington 6, D.C.

The B-70 manned bomber cut-back reflects the advance of technology. Missiles with advanced electronic guidance traveling at speeds far in excess of supersonic bombers offer *sure* penetration of enemy defenses. ARDC's chief confirms that there is no known defense against ICBMs. The Navy's POLARIS highlights that reliance upon missiles requires non-static launching pads. The B-52 should serve as the bridge between reliance on aircraft and the operational missile deterrent.

INTERPRETIVE DATA

By Harold Helfer/DATA

U. S. WANTS GLORY OF VENUS SATELLITE

The Department of Defense would dearly love to put a satellite into orbit around Venus. It would give this country tremendous prestige in the world, be the dramatic gesture that would enable us to leapfrog to glory ahead of the Russians in this space business.

But the fact of the matter is that military men, while recognizing the importance of such propaganda, also recognize this for what it is mostly—window dressing.

This is not to say that it also won't be a magnificent scientific feat, a thrilling performance on the part of that tiny component of the universe known as man. But, militarily, having a satellite going around Venus or Mars or Saturn or any such cosmic body, and this includes the moon too, isn't of any vital significance. Military men are much more concerned about having just some plain little old drab earth satellite in existence.

Our satellites around Venus, Mars, etc., may be terribly romantic, but it is not the sort of thing military men feel on which the survival—even the security—of this nation depends. On the other hand, they do feel that earth satellites might very well have a definite bearing on how things turn out on earth.

Pentagon analysts see our survival problem in the coming decade divided in two parts: 1. Maintaining a proper deterrent posture . . . making sure that this country always has the power to retaliate in kind if a surprise attack comes. 2. Making sure that a surprise attack does not come. For, if the attack is surprise enough, it could reduce our retaliatory potential, both manpower-wise as well as in the hardware department, by a considerable margin.

It is in this latter regard that military men lay such stress on earth satellites. They can be the heart of the surveillance, warning, and communications system that would ward off the surprise element of any aggressive move toward this country. And just a few minutes warning of a nuclear attack can mean the difference of hundreds of thousands of lives and be the determining factor on just what sort of a counter-punch we're left with.

Nor is all this quite just theory any more. We are reaching the point now where one nation can wipe out another with the aplomb of the man on the flying trapeze—the greatest of ease. The Air Force's General Bernard Schriever says flatly that this nation is now open to "destructive attack." *Destructive* is out of the loins of *destroy* and when something is in a position to be destroyed, well, that's a pretty drastic situation.

So, while you may hear more and more about ringing other planets with our satellites, don't scoff at the actual efforts to get homely little satellites around our own planet. This may not have the glow of stardust but it does contain pay-dirt.

IT'S MOHO BELOW

It isn't generally known, but we're not only trying to go as far up as we can but as far down too.

A project is getting under way to dig further down into the earth than man has ever gone before.

With the blessings of the U. S. Government, it is being undertaken by the National Academy of Sciences. It is bound to be a matter of outstanding scientific interest.

The word "moho" may soon have the familiarity of such words today as "outer space," "satellite," etc. The *moho* represents the boundary area between the earth crust, with which man is cognizant, and an area below into which he never has gone. In its own way, this has all the mystery, suspense and fascination of our probings into the cosmic regions.

Will we find a boiling cauldron? Some dramatic new metals never before known? Is it possible we may even run into some strange new living creatures, something which was once believed about the inner earth?

Well, tune in some months from now and find out. Present plans call for the hole to be off the Southern California coast, in some 12,000-foot deep water, as a matter of fact.

The reason that this hole is going to be dug from the ocean floor is that it is believed that the *moho* can be reached more quickly this way. It is estimated that this strata would be about 35,000 feet from almost any point on the surface of solid earth. But from the bottom of the ocean it may be only some 21,000 feet or so below.

The deepest hole on earth at present is a Texas oil well that goes 25,340 feet into the earth. So it may be that the actual depth of this new hole, through the earth itself, will have less depth than this oil well but the important thing is reaching this *moho* strata and getting into an area that will be as brand new to man as if he were on Mars.

Whatever is discovered here is bound to have enormous interest. For this is the region of our planet where earthquake shock waves change speed markedly, which indicates that the substance there may be of a unique nature.

Just what will be found there no one can say for sure. No one really seems to much believe any more, as people did not much more than a century ago, that some form of sophisticated life, not unlike us human beings atop the terrain perhaps, may exist in a hollow core inside the earth.

One thing is known. Some \$15,000,000 is going to be sunk into this hole. In this case . . . it's all so intriguing . . . the word sunk is used more in the literal sense than casting any aspersions on the enterprise itself. You'd have to say, considering the direction it's going, this is one hell of an interesting notion.

ICBM MAY TAKE LESSER ROLE

It may sound sort of fantastic but the fact of the matter is that the intercontinental ballistic missile, the symbol of the push-button military era, is already regarded as being on its way to obsolescence.

There's a feeling that flying platforms and/or super-long distance planes, undoubtedly atom-powered, will supplant the concept of the intercontinental missile.

There are several reasons why there is, in inner Pentagon circles, a growing scepticism about the value and usefulness of the big ICBMs. One is that they are on the vulnerable side. And they're costly too. Once you fire an ICBM, that's it . . . it's gone forever. Whereas a plane can unload its lethal matter on some target or other, then return for further duty. Also, most ICBMs have to be on fixed sites and are easy to be zeroed in on by an enemy.

So there are Pentagon planners who believe that the flying military matter of the future are nuclear-powered planes and platform-type craft which would circle the world endlessly and that the ICBM will take more and more of a back role, becoming just a supplemental item at best.

Perhaps the most interesting thing about all of this is that the contemplation is that these continually-circling craft probably will be man-operated. There's a tendency to put the old-fashioned pilot back into the picture. There's been a steady trend to the notion that electronics, no matter how elaborate and fancy, will never really supplant the human brain.

LIQUID HYDROGEN ENGINES

The best news in a long time may be the development of a revolutionary new rocket engine using liquid hydrogen and oxygen. There are some who say it could narrow the space gap between the U. S. and Russia.

The biggest American rocket boosters are only about half as powerful as the Russian giants and there appears to be no chance of catching up with the Soviets in this department for a number of years. But with liquid hydrogen upper stages, U. S. rocket vehicles conceivably could at least begin to match Russia's present payload capacity.

The United States also is studying the feasibility of a hydrogen fluorine engine which would be even more efficient than the hydrogen-oxygen one that has been developed by Pratt & Whitney Aircraft Co.

Hydrogen engines are designed as upper stages because they work most efficiently in airless space. To boost a rocket off the ground, the fuel has to have enough mass to overcome the pull of gravity and braking effect of dense air. So most boosters use something like liquid oxygen and kerosene to get off the ground.

The liquid hydrogen engine developed by Pratt & Whitney already has produced a specific impulse more than 30% greater than that of comparable kerosene-fueled engines . . . specific impulse is a measure of rocket thrust per pound of propellant per unit of time. The first use of a liquid hydrogen engine, incidentally, is scheduled for the new missile the Centaur, scheduled to get off the ground in 1961.

Whether Russia has a liquid hydrogen engine isn't known. If she doesn't, this news is doubly significant.

POST OFFICE WIDENS FIGHT ON MAIL MISUSE

The Post Office's fight against salacious and pornographic-type material sent through the mail has become front page copy. But this is just one phase of a much broader campaign that the postal people have undertaken, although you don't hear much about the other aspects. Actually, though, postal authorities are making a sustained effort to *purify* the general caliber of mail sent out by business houses.

This is not just a whimsical matter of the moment but has been going on for some months now and the prospects appear that it will be intensified. More and more "border-line" cases are going to be tackled and the crackdown probably will extend to firms that may have a good reputation in the community but whose dealings and practices the Post Office finds to be on the questionable side.

Here, for samples, are some concerns that the Post Office Department recently moved out against by filing fraud complaints:

B-Oyster Concentrate, Los Angeles, for advertising a preparation which allegedly could be used to restore sexual power.

Antone Products, Tampa, for advertising a supposed "slim-trim" reducer and toner.

Excel-o, Brooklyn, for a work-at-home proposal involving mailing material.

Allen Light Intensifiers, New York City, for offering a device which supposedly could be used in saving 75% of light bills.

A Green Cove Springs, Fla., individual for offering "the psychogenic semi-precious zaurite gem indicator with silver chain" which supposedly could find the answer to many questions and problems.

Leonard Arthur Co., New Orleans, for the mail sale of "figure bells," which supposedly could be used for developing the female bust line.

It seems like one American business man was overheard telling another: "It's a tough world. Everytime you come up with something new, the Russians invent it a week later and the Japanese make it cheaper."

U.S. BASE AT GUANTANAMO MAY BE IN JEOPARDY

In 1898, coal-fired U. S. Navy ships seeking to overthrow Spain's reign in Cuba were having refueling troubles. So a band of intrepid Marines stormed ashore at an unused Cuban harbor, routed the Spanish and set up a "coaling station" there for the U. S. Navy.

Today, this is Guantanamo Bay, the Navy's top base in the Caribbean area, serving as a storage, supply, and repair depot and as a major training center. It has two major airfields, one suitable for jets, and, in general, is a highly strategic link in our defense of the Caribbean, including the Panama Canal. And, today, Guantanamo Bay is probably in the biggest jeopardy it has ever been in as a Navy base.

The reason of course is Fidel Castro, the new Cuban strongman, and his markedly anti-U. S. A. regime.

And the fact of the matter is that all Castro would have to do is tell us to get out and, theoretically anyway, we'd have to get.

For, contrary to what is probably general opinion, we are not there now under any "lease" of any sort. The Cuban government, there seems no doubt, has the right to tell us to pull up anchor and leave any time it takes a notion to do so. And the chances are we'd do just that. After all, we are on Cuban soil. It is doubtful, whatever we might think of Castro, that this country would feel morally justified about going to war with Cuba over Guantanamo Bay.

If ordered out of Cuba, we'd probably settle for building up the network of facilities that the Navy has strung from Key West to Trinidad, and which includes Puerto Rico, the Bahama, Leeward, and Windward Islands.

Of course, we'd rather stay on at Guantanamo Bay, which so strategically commands the passage where the Atlantic Ocean and the Caribbean Sea merge. And the best guess seems to be that, as bitterly anti-U. S. as Castro has been sounding, he will have to get a little madder before kicking the U. S. Navy out.

Some 2300 Cubans work at the Navy base, drawing \$5,500,000 a year. Not only that but some 1450 sailors and Marines are stationed there permanently, and the base, at any time, is liable to have several times that number of men there as various ships come calling there for one reason or another.

Theoretically, liberty in the immediate area is supposed to be restricted but there's no doubt that a pretty fair portion of the sailor's dollar does rub off on Cuban economy.

When scientist Dr. Wernher von Braun built a new home at Huntsville, Ala., he paved the front yard with concrete and painted it green.

He didn't want to be bothered with mowing the lawn.

IN SHORT . . .

The Pentagon hears that the Russians already have sent four astronauts, including a woman, into space. The catch is that they weren't able to bring them back. . . .

No decision in a long time has stirred more commotion in the aircraft industry than the one to delay and cutback the B-70 program. Concern is over not only the wrecking of a major weapons-system but also a serious setback in a most promising advance in aero-dynamic design of great significance to civil as well as military aviation. . . .

A controversy is shaping within the Western alliance over salvaging by Bonn government of 80,000 grenades filled with deadly nerve gas. The grenades contain *tabun*, a milligram of which can kill a person. Originally, Bonn government had planned to sink this lethal business far out to sea. The defense ministry is now having second thoughts, mainly because of debate within NATO military circles concerning future role of chemical warfare. There are those who feel that this gas hoard should be retained as "insurance" or "deterrence" against Russia. . . .

There's considerable concern within NATO that the U. S. may withdraw troops from Europe, with what happened in Iceland just a beginning. But no one in the Pentagon imagines that any such thing will happen within the next few years. In fact, the best guess is that it will be at least 20 years before the U. S. pulls completely out of its European bases. . . .

—HAROLD HELFER

Dr. Vasco Viera Garin, the Portuguese delegate to the United Nations, has taken a stand against complete disarmament by the nations.

Why?

Because, Dr. Garin is afraid, it may be just the moment the Martians have been waiting for.

Declares the Portuguese: "It is certainly far-fetched, but perhaps not at all absurd, the way things are moving nowadays on this planet, to imagine a sudden invasion of our earth by aggressive warriors from another celestial body. In such an emergency the security forces of our world, including the Soviet detachment, would cut a poor figure against Martians . . . if we had only kitchen knives and pocket slings to defend ourselves."

Sign in the Pentagon:

"Don't be too worthwhile. Always keep a few character defects handy. People love to talk about your frailties. If you must be noble, keep it to yourself."

"BUT THE PATIENT DIED . . ."

*An Editorial on the Air Research and Development Command
by Martin Caidin/DATA*

In its long and colorful existence, the research and development effort of the United States Air Force and its predecessor organizations has given to American airpower, and to the entire nation, a marvelous strength of scientific leadership that has often served our country well. Even in moments of financial anemia, dedicated men—assisted to no minor degree by the equally dedicated scientists of the former NACA—have assured that our scientific quality in aerodynamics would not be wanting.

We have suffered through failure to implement in operational weapons the results of such research, but this cannot be construed as an R&D failure.

In the rush to credit wartime Germany with all sorts of miraculous achievements, it is so easy to forget that much of what our own Air Force accomplished the Germans frankly considered "impossible" or at the least simply amazing. The case of the long-range, single-seat, single-engine fighter is one to consider; the Luftwaffe frankly considered this accomplishment to be flatly "impossible." Yet these same fighters broke the back of the Luftwaffe over its homeland. And the B-29! No one argued that the B-17 and B-24 lay beyond the best of the Axis powers; the giant Superfortress in mass production the Germans considered nothing less than a calamity in aerodynamic form, even though this machine never exerted its powers directly against the Reich.

And I exhort the reader to ponder, if he will, the value to the German war effort of the A-4 (V-2) rocket, as against the terrifying destruction sown in Japan by the B-29. Effective results are so much more important than exotic press releases!

ARDC stands out in the public mind in its missile role, and, unquestionably, this requires the highest of priorities. Yet we will never see an age when the robot will replace man, when centrifugal force shall crowd aerodynamic lift out of the picture, when we will not require—to use the term—the airplane. What is so easy to forget is that the great infusion of national strength that we have gained from ARDC is never measured in its specifically direct terms. All facets of our national strength have always gained from R&D, and they need the results of our current ARDC organization for years to come if we are to retain leadership in aerodynamic science.

A case in point is a hybrid aerodynamic-missile-ballistic effort—the now defunct SM-64A NAVAHO project. After some \$700 million had been spent in this enormous, decade-long program, the NAVAHO was thrown out the window. The wisdom of this decision is not the bone of contention; the reluctant dismissal of SM-64A was met in many quarters by an uproarious denunciation of such "fantastic waste." But it was hardly anything like that at all.

From this brilliant program—which never left its R&D phase—this country obtained its only high-thrust liquid-propellant rocket motors. And those same motors that were to produce 405,000 pounds thrust in the SM-64A booster saw evolution into the motors that today power the ATLAS, the THOR, and the JUPITER, and that have established the foundation for the SATURN booster and the F-1 motors of NOVA. We gained a fantastic harvest in aerodynamic science from NAVAHO, which in robot form approximated the performance of the B-70 VALKYRIE. Large ramjet engines came into existence only because of NAVAHO. And who can tender so lightly the inertial guidance system that from the "ashcan of dismissal" proved of so enormous a boon to our nuclear submarine program! Even after NAVAHO as a missile weapon system was scrubbed, the RISE project—Research In Supersonic Environment—continued to produce its bounty.

We have become so blinded to the exotic nature of the robot that our national policy has downgraded aerodynamic ventures not only to secondary position, but to a truly precarious existence. All elements of American airpower—military, general, commercial—absolutely need as their lifeblood a major R&D program in aerodynamics. And because of military need, ARDC has been the best equipped through a greatly diversified system to provide the heart and the bulk of that need.

The catastrophic wielding of the economy axe to the B-70 program will one day reveal its results. Not perhaps in a superior Russian manned bomber in the same performance category, but in an over-all lack of vital knowledge, the invaluable fund of data needed to advance all elements of our airpower.

It is much too easy to forget that the airplane is a weapon, no matter what its cargo. ARDC's primary responsibility is in the realm of weapons of combat; to produce the weapons, the tools, that assure superiority to the USAF and the nation at large. It does not specifically attempt to advance the science that produces superior airliners, but the result is inevitable, and all to our good stead.

To pursue a policy which forces a financially-starved ARDC effort to choose between several vital programs is an economical attitude that is penny-wise, and disastrously pound-foolish in the strategic sense. ARDC because of its present, long-established role, is absolutely indispensable to the nation's future. It is in truth only one facet of a far-ranging national effort, but, to be carved out of the aerodynamic picture because of funding problems, is simply to feed the patient well, and to starve him of oxygen.

—MARTIN CAIDIN
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THE SKETCH THAT HELPED WIN A WAR



This sketch, drawn in 1937 by Dr. Russell Varian, Founder and Board Chairman of Varian Associates, led to the development of the klystron — and mobile radar. Dr. Varian's achievement played a vital role in the successful air defense of Great Britain and the ultimate air superiority of the Allies during World War II.

Less than a decade after this historic first practical use of radar, Varian Associates was established to manufacture klystrons and continue the development and improvement of this important new device which is acknowledged to be the foundation of microwave electronics. Today, as the largest manufacturer of klystrons, Varian produces more than 100 types and sizes for a vast variety of commercial and military uses.

The creativity and technical excellence responsible for this accomplishment has found expression in other Varian developments and products, such as NMR and EPR Spectrometers, free-precession magnetometers, graphic recorders, laboratory magnets, VacIon® High Vacuum Pumps, traveling wave tubes and linear accelerators.

At Varian, the inventive process, creative initiative and the "science of practicality" in volume production combine to produce ever-greater quantities of components, instruments and systems of unexcelled performance and reliability.



VARIAN associates

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BOMAC LABORATORIES, INC., BEVERLY, MASS. / VARIAN ASSOCIATES OF CANADA, LTD., GEORGETOWN, CANADA /
S.F.D. LABORATORIES, INC., UNION, NEW JERSEY



MISSION OF THE AIR RESEARCH AND DEVELOPMENT COMMAND

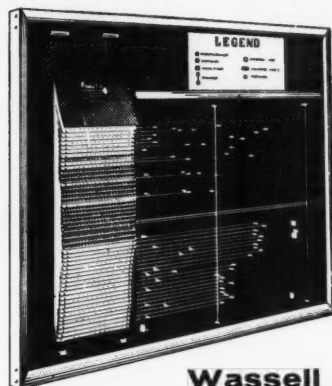
The Primary Mission of ARDC is:

1. To anticipate the most effective developments with which to meet future Air Force mission requirements and to bring these developments to operational readiness at a date limited only by advancement of the technological state-of-the-art.
2. To attain and maintain qualitative superiority of Air Force materiel. In order to accomplish this, ARDC continuously seeks new basic knowledge from any and all sources which will lead to improvements in USAF equipment, weapons, and techniques.
3. To supervise scientific and technical studies and recommend to Headquarters USAF new and improved systems required to accomplish the Air Force mission.

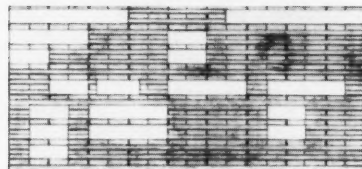
The current technological race with the Soviet Union and the transcending importance of accomplishment of the ARDC mission in the minimum period of time makes necessary a strong SCIENCE-INDUSTRY-AIR FORCE team that will build air weapons that will fly higher, faster, and farther and at the same time be more effective weapons in the safeguarding of our national security.

—Colonel Richard E. Sims, USAF
Asst. DCS/Materiel, Hq. ARDC

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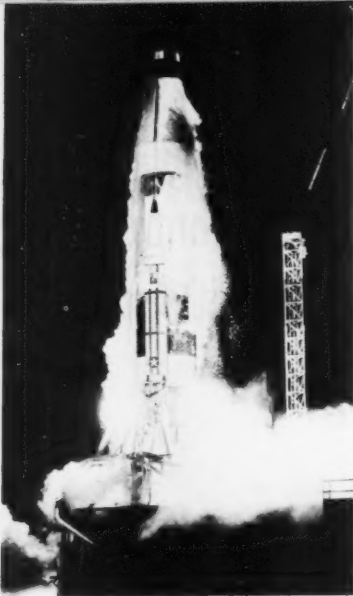
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ATLAS on the pad.

RADAR used by ARDC



ARDC B-52G launches X-15 research rocket plane.



WHEELS TURN. L to R: McColom, Richardson, Schriever, Bergquist.



THE REORGANIZATION

by Murray Queen Smith, Publisher DATA

ARDC REORGANIZATION AT A GLANCE

HEADQUARTERS ARDC at Andrews AFB, Washington, D. C. was streamlined and divided into six main staff agencies: Plans, Research & Engineering, Intelligence, Materiel, Personnel, and Comptroller. Top man, Lt. Gen. Bernard A. Schriever, holds tighter reins on the Command than did his predecessors.

FOUR DIVISIONS IN THE FIELD were established: 1. AF-BMD—Air Force Ballistic Missile Division at Inglewood, Calif., 2. WADD—Wright Air Development Division at Wright-Patterson AFB, Dayton, Ohio, for aeronautical systems development, 3. AFCCDD—Air Force Command and Control Development Division at former Cambridge Research Center, Bedford, Mass. has strong powers over all Air Force electronic needs, i.e., communications and electronic control systems, 4. AFRD—Air Force Research Division, a kick upstairs for the Air Force Office of Scientific Research (AFOSR) as the control body of a more consolidated program of basic research. ARDC's European Office in Brussels became part of AFRD as did WADD's Aeronautical Research Laboratory.

SEVEN ARDC CENTERS remain basically unchanged, two have become Divisions. During mid-1960 the Centers will be assigned to the Division monitoring their particular research and development activity.

THE WHY AND HOW OF ARDC REORGANIZATION

As weapons systems became more complex and lead times became progressively shorter in the ever-quicken pace of technological advancement, the Air Research and Development Command felt a need to reorganize its entire structure to achieve operational readiness of new weapons concepts more quickly.

Before an ARDC overhaul was actually accomplished a lot of study

and ground work had to be made. Two previous ARDC commanders, General Thomas S. Power and General Samuel A. Anderson, felt the need of reorganization and gave consideration to proposals submitted from forward-thinking planning officers on their administrative staffs. However, no significant changes in Command operation were instigated during the periods of control of these two officers.

Finally, during the time that General Anderson was still in command, an Ad Hoc Committee of the Scientific Advisory Board, generally referred to as the Stever Committee, made an independent survey of ARDC management with the initiation of the survey coming about ten months ahead of the appointment of a new ARDC commander, Lt. Gen. Bernard A. Schriever.

Schriever welcomed the recommendations of the Stever Committee. He had many ideas of his own which he felt would speed up operations. It was clear to him through experience and knowledge gained in his former post as head of ARDC's Ballistic Missile Division, that the state of the art in missiles and other advanced weapons systems was moving so fast that something drastic had to be done to shorten the period from idea to finished working hardware.

THE CONCEPT OF CONCURRENCE

Basic to the reorganization of ARDC is the *Concept of Concurrence*. Developed by General Schriever, the *Concept of Concurrence* makes it possible to get an idea for a new piece of hardware on the boards, get the associated support equipment into development, and even begin training the men who will use the new equipment in the field—all at the same time.

Previously, a new weapon system had to be placed in a long period of test and evaluation before the associated support equipment and crew training would begin.

Now, thanks to the increased reliability of weapon systems being

produced by U. S. industries and forward-thinking USAF planners, the whole weapon complex moves forward to operational readiness at the same time.

THE SCHRIEVER TASK FORCE AND PRECIPITATION OF ACTION

General Schriever originated his own reorganization study group, called the Task Force, to review the work of the Stever Committee and make its own studies among both ARDC facilities and ARDC contractors. The work of the Stever Committee and the Schriever Task Force fused into a plan of reorganization of ARDC which was submitted by the Task Force back to General Schriever. Command action was taken and reorganization began on October 5, 1959.

PRINCIPAL FEATURES OF THE REORGANIZATION

The headquarters of ARDC was streamlined and four Divisions were established to manage the R&D doctrines of the ARDC Centers.

At Headquarters ARDC more emphasis was placed on long-range planning and broad program direction rather than the previous main effort of detailed project supervision. Headquarters ARDC was divided into the six principal parts previously mentioned: Plans, Research & Engineering, Intelligence, Materiel, Personnel, and Comptroller. This rather conventional six-element staff operates on the Deputy level so that there is a Deputy Chief of Staff (DCS) for each of the aforementioned staff agencies. Two of these agencies stand out for special mention. They are the DCS/Research & Engineering and the DCS/Plans. The former corresponds generally to a DCS/Operations in other command headquarters, but is particularly adapted to the requirements and functions of this R&D activity. The DCS/Plans is unique in its long-range thinking and control aspects. Finally, Headquarters ARDC was strengthened in its power by the consolidation of previously more dispersed elements of command and staff functions. All elements of staff are now located at Headquarters ARDC, Andrews AFB, and command lines from the Commander ARDC to all subordinate elements are clear.

THE ARDC DIVISIONS EXPLAINED

Four major subordinate organizations, termed Divisions, were set up under Headquarters ARDC in the field of Ballistic Missile & Space Systems, Aeronautical Systems, Command & Control Systems, and Air Force Research. These Divisions are respectively the *AF Ballistic Missile Division*, the *Wright Air Development Division*, *AF Command & Control Development Division*, and the *AF Research Division*.

THE CENTER STRUCTURE

The current ARDC Center structure remained virtually intact with two centers, however, taking on the title of Division to denote a major subordinate field headquarters. These were the Wright Air Development Center which became the Wright Air Development Division and the Cambridge Research Center which will become the AF Command & Control Development Division.

I. AF BALLISTIC MISSILE DIVISION (Ballistic Missiles and Space Systems)

The Air Force Ballistic Missile Division at Inglewood, Calif., is the least changed activity of the new ARDC. The relationship between AFBMD and its counterpart organization, the Ballistic Missile Center of the Air Materiel Command, remains basically the same. The recent decision by DOD to assign responsibility for all military space boosters to the Air Force gives more importance to AFBMD and BMC since they carry this responsibility for the Air Force. In its new status AFBMD will assign projects to the newly activated 6594th Test Wing at Palo Alto, Calif. In addition AFBMD will also have more strength as it assumes operational control of the Missile Static Test Site at Edwards AFB, Calif. and the 6555th Test Wing at Patrick AFB, Fla. Current command of AFBMD is under Maj. Gen. Osmond J. Ritland.

II. WRIGHT AIR DEVELOPMENT DIVISION (Aeronautical Systems)

Wright Air Development Division (WADD) has been established to improve management and reduce the time required for research and development of new,

complex aerospace weapon systems. WADD will have greater responsibilities than the former WADC in planning, programming, and managing the development of military aerospace systems, including aircraft, aerodynamic missiles, missiles associated with aircraft, manned aerospace systems and support systems, and for advancing the technology required for the development of these systems.

Weapon System Project Offices (WSPO) which previously operated under Hq. ARDC's Directorate of Systems Management, have been retained under the WADD Directorate of Systems Management.

Maj. Gen. Stanley Wray, former WADC Commander, heads the new Division.

III. AF COMMAND & CONTROL DEVELOPMENT DIVISION (Electronic and Communication Systems)

The AF Command & Control Development Division (AFCCDD) has been established from elements of the AF Cambridge Research Center and the Air Defense System Integration Division (ADSID) which serve as the nucleus of the new Division at Hanscom Field, Bedford, Mass. Rome Air Development Center at Griffis AFB, prominent in the Air Force electronics R&D program, will eventually come under the control of AFCCDD which will direct all AF communications and electronic control systems. Incidentally, AFCCDD is referred to as "C-Squared D-Squared" (C²D²) by most AF personnel and industry contractors now working with the new Division. Maj. Gen. Bergquist who commanded ADSID, which operated under ARDC executive management, now commands AFCCDD.

IV. AIR FORCE RESEARCH DIVISION (Basic Research Activities)

The Air Force Research Division has been formulated from the Air Force Office of Scientific Research in Washington, D. C., the Aeronautical Research Laboratory at Wright-Patterson AFB, Ohio (formerly under WADD), and ARDC's European Office at Brussels, Belgium which have been engaged in basic research.

Maj. Gen. Benjamin Holzman who directed AFOSR research activities commands the new AFRD.



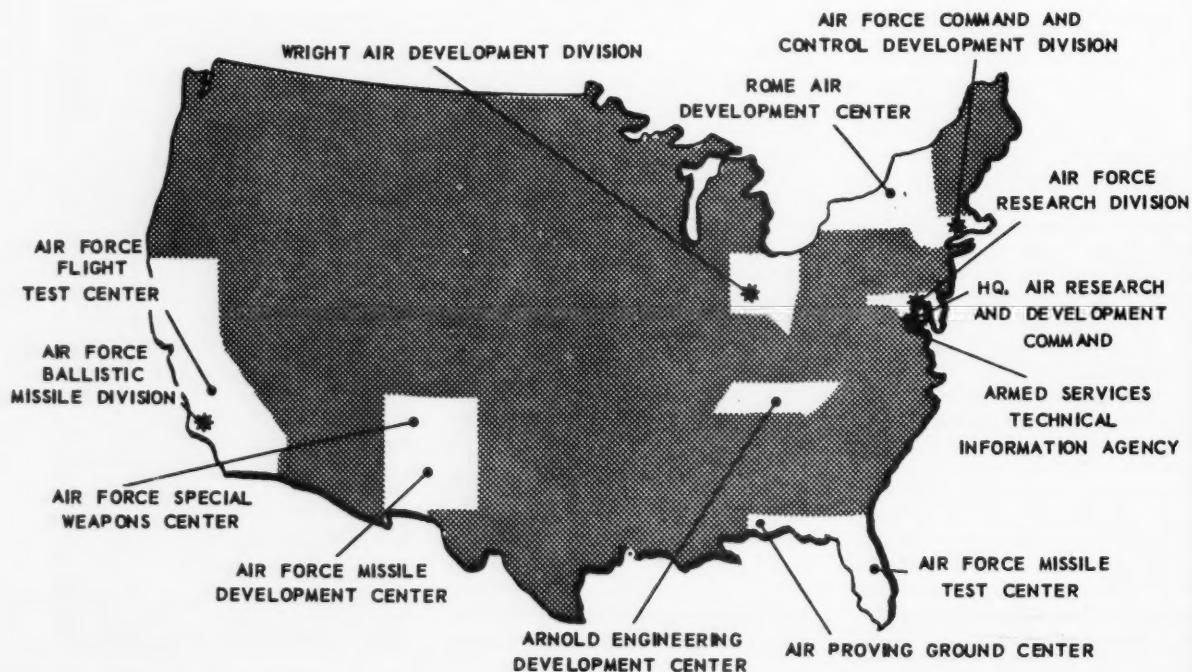
ARDC FY 1960 RDT&E

(Research Development Test and Evaluation) Budget

	(In Millions)
Aircraft & Related Equipment.....	\$ 269.2
Missiles & Related Equipment.....	121.6
Military Astonautics & Related Equipment.....	274.9
Ordnance, Combat Vehicles & Related Equipment.....	15.3
Other Equipment.....	289.1
Military Sciences.....	81.8
Operation and Management.....	402.4
Total ARDC RDT&E.....	\$1,454.3

ARDC CENTER LOCATIONS AND MAJOR FIELDS OF INTEREST

AIR RESEARCH and DEVELOPMENT COMMAND



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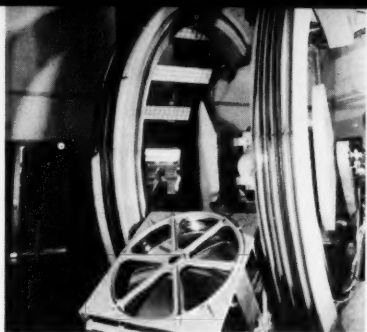
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BIG POPSICLE. Undergoing minus 70 degree cold weather test at Rome ADC is "popsicle" shaped UHF antenna.



TEXAS TESTER is machine for testing gunners or fire-control systems at Wright ADD, Ohio.



HEAT SEEKER. Pilot of F-100 SUPER SABRE unleashes GAR-8 SIDEWINDER at ARDC's Air Proving Ground Center.

THE BIG PICTURE OF ARDC

by Harold Helfer/DATA

THIS is the way it is:

Suppose you had something of a metallurgical background and understood something about chemistry too. And you were aware that the Air Force was absorbed with the problem of the creation of some kind of metallic alloy or substance that would be able to withstand the tremendous friction and pressure of a swiftly moving space ship through the outer cosmic regions.

And suppose you conceived the idea of being able to create just the kind of substance that the Air Force was looking for by giving certain metals, already in being, a coating of a certain kind of chemically-treated paint, something that was a brand new approach to the space vehicle construction problem.

You were so convinced that you were on the verge of something big that you devoted as much spare time working on this idea as you could. You even found yourself spending some of the regular company time at your concern engaging in some of these experiments.

Then the realization came that in order to be able to really follow through on your idea all the way, to do everything up to the hilt, to really be sure whether you had anything or not, you were going to have to have help. *Financial.* Maybe some knowledgable advice too.

What to do? . . . how do you get this?

That's where the ARDC comes in.

WHAT ARDC DOES

ARDC stands for Air Research And Development Command. It is interested in anything and everything that will better fit the Air Force for the space age that lies just ahead. It can be a tiny screw that has a somewhat better gripping thread or some kind of additive that gets a little more oomph into a fuel or it can be an entirely new concept in missile design. It can be a better way of filing reference material and it can be a brand new theory that might rival that of Einstein's relativity in sweep and impact.

And who is going to do all this for the ARDC and the Air Force? *You.* Fellows like the metallurgist chap mentioned and all others with notions, ideas and new concepts about things.

All the services of course are interested in establishing a rapport with industry, business, educational institution, research organizations and the general public. But none more so than the Air Force. For the main and simple reason that it does less "in-house" research and development than the other branches of the Department of Defense. It prefers working through industry, business, research institutions and talented individuals who perform 90% of its work in this field. In the area of general hardware production, all the work and fabrication required by the Air Force is done by outside industry and businesses.

That is why there are some 30 contact offices ringing the country, places where firms and individuals can go if they think they have something worthwhile to offer the Air Force.

These offices not only can get you squared away, so that, in no matter what field you may be engaged, you make the proper contact with the proper expert somewhere in the Air Force. In addition, it can also help you to be at your best in making this contact . . . as a matter of fact, it can give you something of an idea as to whether you're in the groove or not in your thinking and approach.

ARDC CAN GIVE YOU SUPPORT

The ARDC is the link between you and the finished product that it is hoped you'll be producing for the Air Force. If ARDC thinks you have something, it is prepared to give you all the moral support it can, and in the most concrete and evident way possible—financial assistance, when necessary.

Actually, there doesn't even have to be any sort of product, as such, involved. You might, for instance, have a theory that missiles set off at a certain time of day, under certain atmospheric conditions, when the earth-moon-sun relationship was in a particular position, had a better chance of accomplishing their missions than at other times. If you could bring to bear sufficient and provocative enough thought, ARDC might be willing to back you on



F-100 SUPER SABRE is chase plane following ARDC's B-52G carrying X-15 research rocket plane "upstairs" for trip to fringe of space.

such a project to see if you could prove your theory.

ARDC goes in for basic research as well as looking for the practical application of ideas and items. Whether it's a matter that just adds to general knowledge in encyclopedic fashion or something that could revolutionize all our lives, ARDC wants to be on top of the situation.

ARDC KEEPS YOU IN FILE

To be practical about it, it must be recognized that sometimes one thinks he has a great and wonderful idea when a more objective appraisal might tend to tone this down somewhat. It might turn out that one miscalculation in your thinking has led you off the beam. Or, as happens quite, quite often, it might develop that your idea already has been tried out and found wanting . . . or maybe is already obsolete.

What ARDC would like to do, if it is evident that you do have something on the ball, that you have a set-up indicating certain capabilities and potentials that the Air Force is interested in, is to get you lined up with it.

It wants to keep you in its "source file." If there is no contract in prospect immediately, it wants to make sure it can use your services when the need and opportunity arises. It wants a run-down of what it can expect of you, what sort of contribution you can make to the Air Force, what your "best hold is," as they say.

This is a two-way street though as far as ARDC is concerned and it will send you stuff for your files too, info that it hopes will give you new insight into what the Air Force is striving for. It's what you might call a sort of "embryonic partnership" which ARDC hopes will someday blossom out into the real McCoy.

ARDC PUBLICATIONS

ARDC puts out three publications as its guideposts which anyone hoping to deal in a business way with the Air Force ought to get. They are BASIC RESEARCH IN THE AIR FORCE, APPLIED RESEARCH PLANNING DOCUMENT RELEASE PROGRAM and RESEARCH AND DEVELOPMENT IN THE AIR FORCE.

They're yours for the asking. Just write to Headquarters ARDC, Attn: RDMK, Andrews Air Force Base, Washington 25, D. C.

They'll spell out the various fields of research, knowledge and techniques with which the Air Force is concerned and they range from matters dealing with "Aerospace Environment" to "Electromagnetic Warfare" and under each of these subjects some sub-areas are spelled out. For instance, under the subject "Communications" these fields are mentioned in particular: Atmospheric communications. Non-radio communications. Satellite and space communications. Communications theory, analysis and techniques.

CLASSIFIED INFO AVAILABLE IF QUALIFIED

ARDC will go even beyond this. If you are a responsible firm, and ARDC feels you have the potential of coming through for it in some field, it will let you in some of its confidential plans for the coming year in that field. It is actually a classified document that you get, and proper security arrangements are instituted of course in this connection.

Occasionally, these documents may go to an individual but he'd have to be someone with a fine reputation and known for creative productivity, say, like Robert Loewy, the industrial designer consultant.

ARDC WANTS PARTNERS

In other words, in a very real sense, ARDC is attempting to make industry, business, educational institutions, research organizations and gifted individuals a partner with it in the Air Force's hopes, dreams and ambitions.

As a matter of cold statistics, the odds against any one idea of any one clicking is undoubtedly rather considerable.

But everything that's man-made must come from the ideas that began with separate human beings. So some of these ideas are bound to pay off. And that's why the ARDC, with its eyes way off in the clouds somewhere, has its ears close to the ground.

SCHRIEVER ANSWERS QUESTIONS FROM DATA READERS*

General Schriever,

Q: What major scientific breakthroughs would you most like to see take place? (Col. Walter Brown, Varian Associates, Wash., D. C.)

A: Our first national objective in this country is to preserve peace. The importance of any scientific breakthrough in aerospace technology must be measured by its contribution toward this end. *Foremost among these, I would list a positive defense against ballistic missiles, which does not exist at present. A positive defense system would be one capable of performing the intercept early in the ballistic missile's trajectory, plus efficient means for warning and detection, so that the interceptor could find and destroy or immobilize enemy missiles in flight, before they could reach their target. In second place, I would rank a means of guaranteeing survivability of our offensive force thus insuring the immediate readiness and utility of our own retaliatory missile strength, despite any initial success that might be achieved by an enemy surprise attack. Third, in my estimation, would be increased propulsion efficiency to enable larger militarily useful payloads to be placed in orbit and provide a maneuver capability while in orbit. Improved propulsion would also be utilized for controlled de-orbiting to permit payload return from space.*

General Schriever,

Q: What is your estimate of how long it will be before we land on the Moon or on any planet? (Dr. Miklos Cserepfalvi, Silver Spring, Md.)

A: In my opinion, no arbitrary time period can be assigned to the achievement of a capability for planetary exploration, because so many factors are involved—among them, the development of a rocket engine of sufficient thrust to carry a manned expedition to the Moon or beyond and bring it back, the attainment of systems reliable enough so that we can entrust the lives of human astronauts to them, and so on. Apart from the possibility of landing a person on the Moon or another planet simply as a stunt—so that we can say we did it—I believe that an operational capability for inter-planetary flights will evolve gradually from increasing experience in space activities closer to the Earth. How soon it will come depends largely on the urgency we give to the development of military satellite systems and maneuverable spacecraft.

Q: What are some of the things the American public should be more aware of in the Space Age picture, particularly as they apply to military uses of space? (R/Adm. J. A. Briggs, Chesapeake Instrument, Shadyside, Md.)

A: First of all, that space flight is not merely an adventure, which we undertake solely for the glory of the achievement, but a vital element of national safety in the missile era. Our ability to send useful payloads, both civilian and military, into space is an outgrowth of the military ballistic missile, which has provided us with the necessary propulsive power. Through its tremendous speed, range, and firepower with thermonuclear warheads, the missile poses an immediate threat to our security, which can only be overcome by concentrated effort on the development of military aerospace systems for defense. Such systems will probably employ satellites to give us warning and detect the approach of a missile attack, communication and command satellites to provide the necessary control, and maneuverable spacecraft for the interception. In addition, such a system will provide the initial elements to enable us to extend our counter for a capability. All these will contribute ultimately to our resources for scientific deep space exploration, just as the missile itself has done—but our defense needs should come first. So I would urge the American public to realize the urgent necessity of developing space systems for security, and to consider the prestige that may come from future flights to the Moon or Mars as a dividend, which will automatically follow.

—LT. GEN. B. A. SCHRIEVER



* In our next issue of DATA we will feature the Navy's BUREAU OF NAVAL WEAPONS. In that issue DATA will quiz Rear Admiral Paul D. Stroop, Chief of Bu Weps, with questions submitted by DATA subscribers. If you have an interesting question concerning the BUREAU OF NAVAL WEAPONS that you would like answered by R/Adm. Stroop or his staff, please send your question to DATA, Dupont Circle Bldg., Washington 6, D. C. before 26 January 1960.



SCHRIEVER

A Biographical sketch of the Commanding Officer of ARDC

By Harold Helfer/DATA

"What a waste of talent! Here he is fooling around with missiles when he could have been the greatest golfer of 'em all!"

This is strictly a personal appraisal, of course, the speaker being an old Texas golf pro named Harvey Penick. Most everyone—Americans, anyway—will be pretty darn glad that Lieut. Gen. Bernard A. Schriever, who perhaps as much as any other one man is responsible for this nation's entry into the space age, elected to become interested in missiles and make a career of it.

But the story of Bernie Schriever, chief of the Air Force's Air Research and Development Command, is not so much that of a man with several marked talents but one of the best Horatio Alger tales of our time.

Born in Bremen, Germany, back in 1910, when he arrived in America as a boy of seven with his mother, World War I was reaching its zenith, effigies of Kaiser Wilhelm hung on the lamp posts across the United States and there was a general tide of anti-German feeling everywhere. It was a fearsome way to begin a new life and Mrs. Schriever bundled up her boy and hurried him to the German-American community of New Braunfels, Tex.

The blue-eyed German boy was a friendly youngster, full of fun and a good sport, and it didn't take him too long to adjust to the general community. But things were not so easy for him and his mother. His father, a German seaman who had been interned during the war, was killed in a factory accident at San Antonio. Mrs. Schriever became a housekeeper for a well-to-do Texas family.

Young Ben pitched in too. He took to caddying. But he became so fascinated by the game of golf that he began playing himself. Once he'd made up his mind about something he always had a habit of following through and soon he was quite a whiz as a golfer in the San Antonio area, something of a sensation as a teen-ager, as a matter of fact. The general still shoots sub par golf and that's why old pro Harvey Penick speaks so wistfully about what a topflight golfer the links missed when young Ben Schriever left it for the world of military science.

Actually, there were a few steps in between. For awhile Ben operated a refreshment stand by the golf

course. Then he went to Texas A&M, studied engineering and, when he got out, promptly joined the Air Force. And, except for a brief period in 1938, when he became a commercial pilot, he's been with the Air Force ever since.

He's by no means a theorist general. Among other things, he served as a test pilot at Wright Field and flew 63 bomber missions over the Pacific during World War II.

Today, at 48, with a key job . . . perhaps THE key job . . . in the Air Force, Ben Schriever is making decisions which could very well effect this nation's survival.

Perhaps as much as any one man he is responsible for the success—or failure—of this country's intercontinental ballistic missile program.

The broad-shouldered general, who is handsome enough to be mobbed for autographs by women on his tours of missile-producing factories, stood up and fought for a missile program for this country back a number of years ago when he was but an obscure colonel and had to buck all sorts of generals who wanted to hang onto old tried-and-true methods and systems.

It was by no means an easy fight but Ben Schriever finally won out and, in recognition of the fact that he had carried the missile ball, plus the acknowledgment of his role as a prophet and leader of the new space age, he skyrocketed up to the rank of a three-star general in five short years and was given the all-important command of Research and Development, which meant the missile program.

Right now, it looks as if vital and encouraging news in regard to the intercontinental ballistic missile is going to be made soon by our country. If so, a major share of the credit will have to go to this German refugee boy who arrived here under such unfavorable circumstances but has managed to make for himself a key role in the affairs of this country. And, if something should go wrong with the program Gen. Schriever, who, to make his success story complete, married a general's daughter and is the father of three fine children, would be the first to acknowledge that the blame be laid at his doorstep. That's the kind of a guy he is.

DATAGRAM

COBRA EVALUATION TO USMC

100 COBRA anti-tank missiles by Boelkow Entwicklungler, Munich, to be tested by USMC. Wire-guided, 2000 yd. range, utilizes solid rocket fuel. Tests sched. for early '60 at Camp Pendleton. This is the first time USMC has stepped out-of-house on its own but they need a new anti-tank weapon and plan to continue out-of-house search if necessary until they find what they want. ///USMC Info/

JET FIGHTER PILOTS PASSE

In 1963, and possibly as soon as 1962, AF will stop orders on jet fighter planes because of concentration on missiles as attack and interception weapons. Cut-down has already begun: F-108 cancelled completely; F-107 (only 3 made) sent to NASA for high speed research; F-106 currently in use will be last of series. ///AF Info/

GRUMMAN GETS \$26 MILLION NOD FOR WF-2

Navy awarded third contract since 1957 for reconnaissance plan with radome containing long-range detection equipment. ///DOD/

NAVY ORDERS ADDITIONAL BULLPUPS

Martin Co., Orlando, snagged \$22,600,000 contract for air-to-surface missiles. ///DOD/

NAA TO SUBCONTRACT MINUTEMAN

AF handed \$115,020,000 R&D contract to Autonetics, div. of North American Aviation for inertial guidance and flight control systems on Minuteman, new solid fuel ICBM. Subcontracts to be awarded for system components. ///AF Info/

TITAN HAS NEW HOME

Martin moving fabrication of this bird to Denver, Colo. George M. Bunker, chief exec, will have control of new plan. ///DATA/

SUB SET BUT MISSILE ISN'T

GEORGE WASHINGTON, designed to fire Polaris missile, was commissioned at Groton, Conn. 30 Dec. 59. Equipped to launch 16 missiles but Polaris is not yet operational. ///DOD/

SEA-SNOOPERS GET BOOST

Sonobuoys, \$13 million worth, to be made by 6 electronic firms: Hazeltine, G-E, Motorola, Sanders, Hoffman, Magnavox. ///Navy Info/

WHITE REVEALS PLANS FOR 'SKY BOLT' - 1000-MILE ALBM

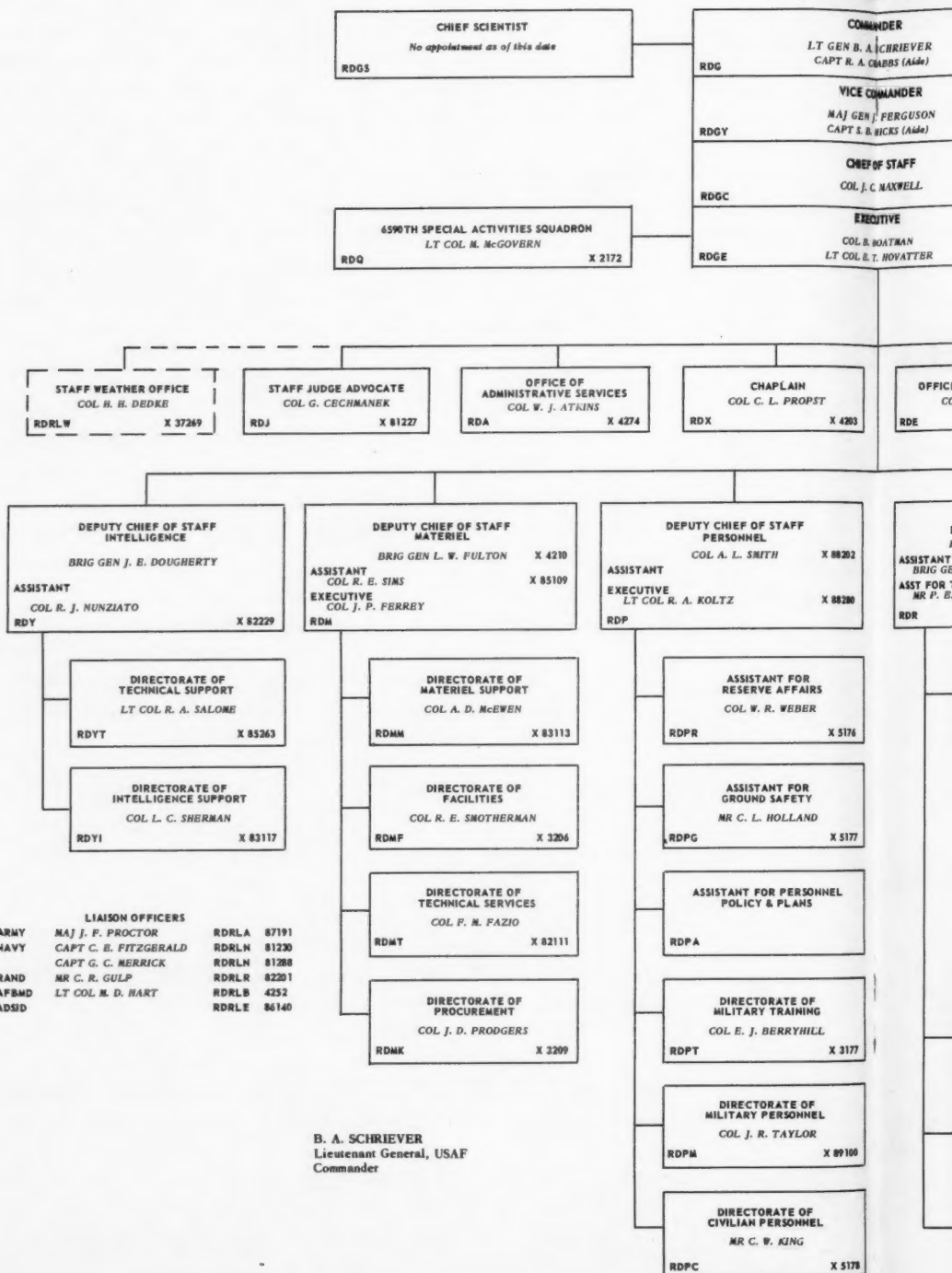
AF Chief of Staff Gen. Thomas D. White made announcement at Natl. Press Club Jan. 12 that SKY BOLT will be great SAC aid. ///DOD/

HEADQUARTERS AIR RESEARCH AND

ANDREWS AIR FORCE B.

WASHINGTON 25, D.

Main Telephone Number - Redwo



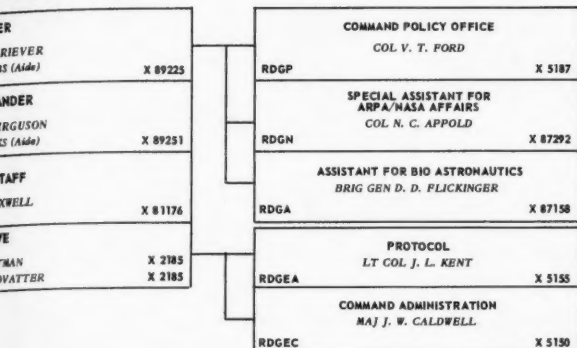
B. A. SCHRIEVER
Lieutenant General, USAF
Commander

AND DEVELOPMENT COMMAND

FORCE BASE

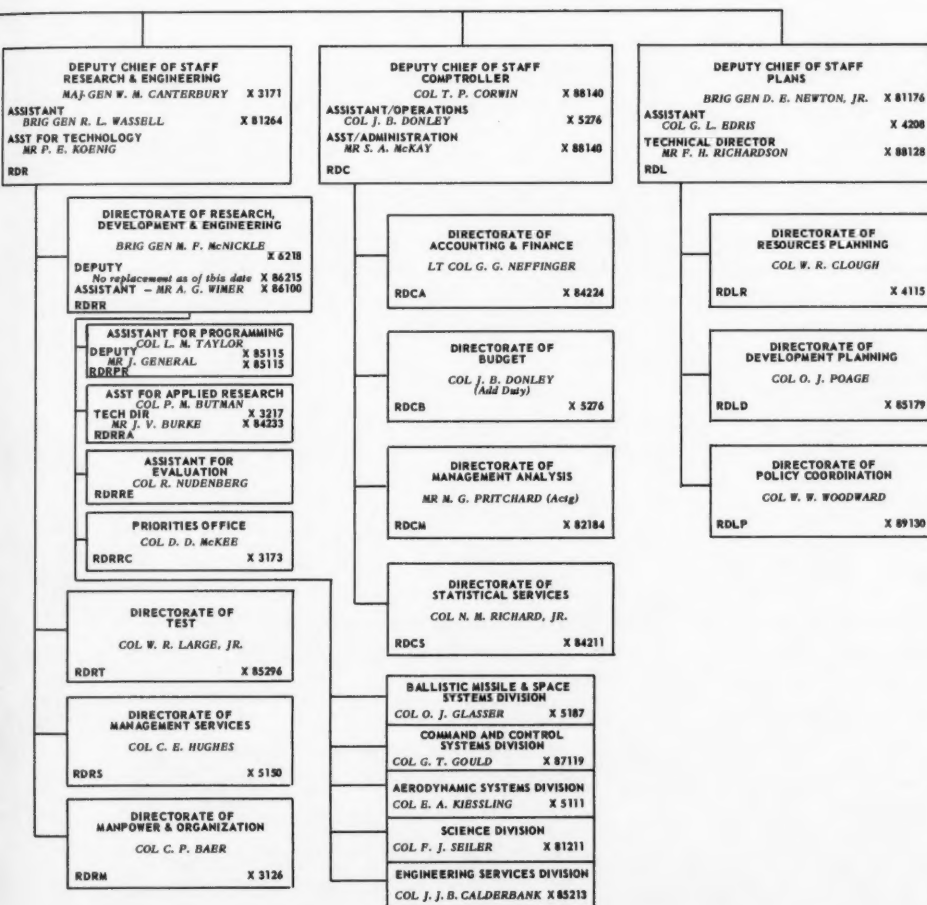
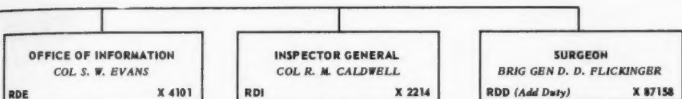
25, D. C.

- Redwood 5-8900



data
publications

Dupont Circle Building
Washington 6, D. C.
Hudson 3-9450



WESTINGHOUSE'S NAVY CONTRACT INCREASED

Contract increase of \$12,425,000 for components for nuclear subs awarded to WE. Components to be purchased competitively by WE from industry. ///DOD/

FAIRCHILD TARGET MAP COORDINATE LOCATER

Automatically selects correct maps from choice of 11,000 micro-filmed maps then locates spot in less than 15 sec. Scales can be varied due to sheet size. Still in development. Guiding hand is AROC, Ft. Belvoir. ///DOD/

DISAPPEARING MESSAGES PRESERVE SECRECY

Message recorded on Alden Electronics facsimile paper disappears immediately upon recording, envelope is sealed automatically, and message reappears later so that only sender and receiver see text. ///Alden Electronics/

WU OPENS FACSIMILE SERVICE TO PUBLIC

Public may use Western Union facsimile transmission service for first time. Minimum cost, coast-to-coast: \$4. Connects N. Y., Wash., Chicago, L. A., and San Francisco. ///Western Union/

SILICON DIODES FASTEST YET

Latest of the miniatures comes from Texas Instruments, Inc. Extremely fast, adapted to severe temps and shock conditions. ///DATA/

SHELTER CREATED BY FOAM SPRAY

Weather-tight camp set up within minutes thanks to new plastic foam which can be sprayed over an inflated canvas dome. Igloo-like structures have superior insulating qualities and may be adapted to packaging and refrigeration uses. Developed by Atlantic Research Corp. for Army. ///DOD/

COMPACT CONTROL COMPUTER

All solid-state industrial control computer taking 20 in. vertical space, predicted by Packard Bell for next May. Price tag: \$25,000-\$35,000. ///Packard Bell/

VIGILANTE SYSTEM UNVEILED

Dugway Prod. gave slight peek at TNT thrower for low flying a/c. Sperry Utah Labs has responsibility for this 37 mm. doppler radar guided gattling gun. ///DATA/

AEROCAR REACHES MARKET

Aerocar (DATA, 12/59) on the market at last. The plane cruises at 100 mph; on land, wings are folded back and it becomes a car with road speed of 55-60 mph. ///Aerocar/

WHAT COUNTS MOST IN GETTING AN ARDC CONTRACT?



When you get down to it, what really counts most in getting that Government contract?

Well, these are some of the more important factors considered in letting military research and development contracts as reported in an off-the-cuff roundtable discussion between DATA's Harold Helfer and ARDC officers concerned with industry contracting:

1. REPUTATION OF THE COMPANY in the particular area of research, including top personnel and the ability to organize and control work and produce results on agreed upon cost and time schedules.
2. SOUNDNESS OF APPROACH to the problem.
3. PREVIOUSLY SUCCESSFUL R&D CONTRACTS for similar specific projects.
4. UNIQUE IDEAS AND ORIGINALITY in the technical proposal — a different way to do the job.
5. SHOWING UNDERSTANDING of the general military operational needs as well as the specific problem. It counts a lot in the contractor's favor if he will make sure he clearly understands all parts of the technical requirements before he submits his proposal.
6. WELL PREPARED AND COMPLETE PRESENTATION of proposal which is thoroughly detailed and well documented so as to impress the military officers with the technical competence and understanding of the contractor.
7. SOUND FINANCIAL CONDITION of the contracting company.
8. FAIR QUOTED PRICES consistent with the complexity of the project, amount of risk involved and amount of future commercial value the contract would have. Don't try to bleed Uncle. You won't get repeat business that way.
9. STRESS ON RELIABILITY and easy maintainability of item to be developed.

DATA would like to make it clear to readers that ARDC contracts are not awarded on the basis of being friendly with Government personnel of the activity or in overt shows of general cooperation. In summary, the presentation should be factual and devoid of familiarity, the company competent and clean in its practices and prices quoted, the technical personnel of the company involved in the project should fully understand what is required.

HOW TO USE ARDC REGIONAL AND LIAISON OFFICES



Whether you just have an idea kicking around in your head or feel that you are well on the road to the actual achievement of something, your first step in bringing this to the fruition of an ARDC contract probably will be to contact an ARDC Regional Liaison Office.

The exception would be if, by a fortunate act of providence, you happened to be near one of the four ARDC Divisions or seven ARDC Centers, and, furthermore, this activity happened to be operating in the area in which your interests and ideas lie.

For instance, let us suppose you happened to be located somewhere near Tullahoma, Tenn., and happened to have an idea, or to be working on something, dealing with propulsion systems. That would indeed be quite a fortuitous bit of circumstances for you because at Tullahoma, ARDC has a major Center which, among other things, deals with propulsion systems. So, whatever are your thoughts and problems on this matter, you can get a good heart-to-heart and man-to-man hearing by just dropping in on this base and contacting the Contractor Relations Branch or the ARDC Small Business Specialist at the Arnold Engineering Development Center.

By the law of averages though, you are more likely to find yourself nearer an ARDC Liaison Office than an actual Center and that Liaison Office will be your initial contact with ARDC. The Liaison Office can direct and channel you to your prime contact source, the person or persons who can best evaluate and give you a hand on whatever it is you are working on or have in mind.

That's one of the reasons these offices are there, to serve as links. The chances are, as a matter of fact, they can also give you a pretty good idea, there and then, whether you're on the right track with your ideas, whether you're working in the right groove.

They can also familiarize you with the ARDC set-up and procedures in general and can be a big help in steering you along a proper course toward an ARDC contract. If you should happen to find yourself by a major ARDC activity, but it is not doing work in your particular area of interest, then again the Small Business Specialist at the ARDC Liaison Office can serve the function of a contact point for you. If, for instance, you're near Tullahoma, Tenn., but your interest lies in, say, chemistry, rather than propulsion, then the ARDC Small Business and Contractor Relations personnel at Tullahoma will see to it that you obtain the necessary guidance to proper contacts with the ARDC technical personnel that are primarily concerned with chemistry.

A list of ARDC Regional and Liaison Offices follows:

Directory of



ARDC REGIONAL AND LIAISON OFFICES

1 January 1960

ARDC Regional Office

c/o Department of the Navy
Room 4549, Munitions Building
OXford 5-6700, Ext. 63594 - 62471

ATTN: Lt. Colonel M. N. Abramovich
Washington 25, D. C.

ARDC Liaison Office

Langley Research Center (NASA)
Park 2-7911, Ext. 21144

ATTN: Captain C. D. Bailey
Langley Air Force Base, Virginia

ARDC Liaison Office

Naval Research Laboratory
JOhnson 3-6600, Ext. 2266

ATTN: Major K. A. MacAaron
Washington 25, D. C.

ARDC Liaison Office

Applied Physics Laboratory
The Johns Hopkins University
JU niper 9-7700, Ext. 10

ATTN: Mr. H. C. Beaman
Silver Spring, Maryland

ARDC Liaison Office

Engineer R&D Labs
Corps of Engineers
EDgewater 9-5500, Ext. 34251

ATTN: Captain F. B. Alford
Fort Belvoir, Virginia

ARDC Liaison Office

Aberdeen Proving Ground
Building No. 305

Aberdeen 1000, Ext. 21287

ATTN: Captain J. P. McDonough,
Jr.

Aberdeen Proving Ground, Md.

ARDC Liaison Office

Naval Propellant Plant
Riverside 3-2111, Ext. 35

ATTN: Captain Wm. Cameron III
Indian Head, Maryland

ARDC Liaison Office

Redstone Arsenal
Building 4488
JEfferson 6-4411, Ext. 33825

ATTN: Major Lester E. Clark
Redstone Arsenal, Alabama

HQ AIR RESEARCH AND DEVELOPMENT COMMAND

Andrews Air Force Base
Washington 25, D. C.

Directorate of
Technical Services
(RDMT)

Director:
Colonel Frank M. Fazio

Telephone:
REdwood 5-8900
Ext. 82111 - 5180

ARDC Regional Office

346 Broadway
REctor 2-8000, Ext. 440-441

ATTN: Lt. Colonel Louis Schaffer
New York 13, New York

ARDC Liaison Office

Signal R&D Laboratory
LIberty 2-4000, Ext. 51209-51309

ATTN: Captain W. L. Sandidge
Fort Monmouth, New Jersey

ARDC Liaison Office

Naval Air R&D Activities Comd.
OSborne 5-7000, Ext. 431

ATTN: Major W. F. Kroemmelbein
Johnsville, Pennsylvania

ARDC Liaison Office

Massachusetts Institute of
Technology
68 Albany Street
UN. 4-6900, Ext. 3509 - 3508
ATTN: Major W. W. McKenna
Cambridge, Massachusetts

ARDC Liaison Office

Bell Telephone Laboratories
Whippany Laboratory
TUcker 7-1000, Ext. 2711

ATTN: Major J. E. Hughes
Whippany, New Jersey

ARDC Regional Office

Room 715, La Salle Building
39 South La Salle Street
FI nancial 6-9181 - 6-9182

ATTN: Lt. Col. Carl E. Trexler
Chicago 3, Illinois

ARDC Liaison Office

Lewis Research Center (NASA)
21000 Brookpark Road
ORchard 1-1211

ATTN: Lt. Col. L. G. Pattillo
Cleveland 35, Ohio

ARDC Regional Office

6331 Hollywood Boulevard
HOllywood 7-5171 - 7-5375

ATTN: Colonel Paul F. Nay
Los Angeles 28, California

ARDC Liaison Office

Ames Research Center (NASA)
YORkshire 7-3056

ATTN: Lt. Colonel G. S. Brownell
Moffett Field, California

ARDC Liaison Office

San Francisco Bay Area
1176 Los Altos Avenue
WHitecliff 8-1434

ATTN: Major O. R. Hill
Los Altos, California

ARDC Liaison Office

Naval Missile Center
HU nter 6-1681, Ext. 416

ATTN: Major O. L. Koontz
Point Mugu, California

ARDC Liaison Office

Naval Ordnance Test Station
INyokern 5-0111, Ext. 71403

ATTN:
China Lake, California

ARDC Liaison Office

c/o Boeing Airplane Company
JU niper 5-5744

ATTN: Lt. Colonel R. L. Kendig
Seattle 24, Washington



ARDC "WHO'S WHO" IN CONTRACTING

Center	Director of Procurement	Symbol	Contractor Relations	Small Business Specialist	Telephone No.
Hq, ARDC	Colonel John D. Prodgers	RDMK	Mr. L. E. Olson RDMKS (Procurement Sources) Ext 85111	Mr. John C. Eiden Executive for Small Business RDMK-2 - Ext 81104	Redwood 5-8900 Ext 85111 Ext 81104
AFOSR	Lt. Col. Arthur L. Thayer	SRK	Mr. Seymour Milnovsky SRKF	Mr. S. Milnovsky SRKF	Lincoln 6-5650 Ext 281
AFTC	Lt. Col. J. M. Venable	FTK	Mr. H. E. Griffin FTKSA	Mr. G. M. Holmes FTKC	Clifford 8-2111 Ext 29431
AFSWC	Lt. Col. Peter M. Packard	SWK	Mr. Frank Stewart SWKSR	Mr. M. H. Nickerson SWKSB	Chapel 7-1711 Ext 3966
San Ant R&D Proc Office (WCKL) P.O. Box 63 Lackland AFB, Texas	Mr. W. V. Pfister (Contracting Officer)	WCKL	Miss Winifred Bell WCKLS	Miss Winifred Bell WCKLS	WAlnut 3-3411 Ext 2113, 2564
AFMTC	Colonel P. Cornwall	MTK	Mr. C. W. Corcoran MTKSA	Mr. C. W. Corcoran MTKSA	Ulysses 7-6151 Ulysses 7-2231
AFCRC	Mr. William Irwin	CRK	Mr. John F. Condon CRKS	Mr. J. Condon CRKB	CRestview 4-6100 Ext 2244
RADC	Colonel H. Burhanna	RCK	Mr. John Vella RCKS	Mr. M. L. Wasser RCKB	Rome 3200 Ext 2204
WADD	Lt. Col. T. Watkins	WCK	Miss Betty J. Weisbrod WCKAR - Ext 39250	Mr. L. Grier WCKA	Clearwater 3-7111 Ext 38216
APGC	Lt. Col. Claude Duke	PGK	Mr. J. V. Leftwich PGKZ	Mr. J. V. Leftwich PGKZ	Eglin 2231 Ext 4103
AFMDC	Major Charles LaBarr	MDK	Mr. Durward P. Hathcock MDKS	Mr. D. P. Hathcock MDKB	GraNite 3-6511 Ext 6761
AEDC	Mr. James F. Fuqua	AEK	M/Sgt. R. Fillis AEKS	M/Sgt. R. Fillis AEKB Mr. H. F. Stegeland Mr. W. Stalew Mr. D. C. Stevenson Mr. Wesley Grieve	Gl 5-2611 Ext 272 REctor 2-8000 Ext 784 HOLlywood 7-5171 Financial 6-9181 Financial 6-9182 OXford 6-3594 Ext 62471



Operational Requirements

expressed military needs

OF THE AIR RESEARCH AND DEVELOPMENT COMMAND

The list below is the latest compilation of Applied Research Planning Documents (ARPDs) available to qualified contractors under the ARPD Release Program of ARDC. Interested contractors should write directly to Headquarters ARDC, Andrews AFB, Washington 25, D. C., Attn: RDMK, and request ARDC HQ Form 0-398, Application to Request ARPDs.

<u>AREA NUMBER</u>	<u>TITLE</u>
710A	<p>NUCLEAR WARFARE</p> <p>1. Nuclear Weapon Application, 2. Nuclear Weapon Delivery Techniques & Associated Equipment, 3. Nuclear Weapons Effects.</p>
720B	<p>SUPPORT EQUIPMENT TECHNIQUES</p> <p>1. Flight Vehicle Direct Support Equipment, 2. Base Site Equipment and facilities including Cryogenic Generation, Environment Control, Hazard Detection & Control, Site Integration & Check out equipment. 3. Packaging, Handling & Restraint, Aspects of Logistics, 4. Surface Installed Launchers for Flight Vehicles.</p>
720F	<p>DEPLOYABLE AERODYNAMIC DECELERATORS</p> <p>1. Deceleration, Stabilization, Control, and/or Recovery of Personnel, Flight Vehicles, and/or Weapons.</p>
720H	<p>MATERIALS</p> <p>1. Air Force Materials Program in Metals, Ceramics and Cermets, Magnetic, Polymeric, Textiles, Finishes & Preservation, Electric & Electronic, and Analysis, Evaluation and Application.</p>
730D	<p>NAVIGATION AND GUIDANCE</p> <p>1. Bombing Techniques, 2. Navigation Techniques, 3. Guidance Techniques for Flight Vehicles, 4. Guidance for Military Space Vehicles.</p>
730E	<p>FLIGHT CONTROL</p> <p>1. Attitude control for Flight Vehicles, 2. Flight Data Sensing and Presentation.</p>



<u>AREA NUMBER</u>	<u>TITLE</u>
730F	WEAPON FIRE CONTROL 1. Fire Control Techniques, 2. Targets, 3. Scoring Techniques.
730H	VEHICLE DEFENSE 1. Active Defense Techniques, 2. Defense System Integration.
730J	COMPUTER AND DATA PROCESSING TECHNIQUES 1. Scientific Computation, 2. Data Handling, 3. Automatic Control, 4. Mathematical Techniques.
740A	ADVANCED WEAPONS 1. Directed Energy Weapons, 2. Aerospace Weapons Concepts, 3. Ballistics.
750A	MECHANICS OF FLIGHT 1. Flight Vehicle Structural Design, 2. Flight Vehicle Flight Dynamics, 3. Flight Vehicle Crew Station Design and Escape Techniques, 4. Flight Vehicle Environmental Protection, 5. Dynamics Testing Techniques covering those areas of scientific investigations which treat the problems of conception, design and construction techniques of flight vehicles.
750E	PROPULSION 1. Primary propulsion for flight vehicles including engines, propellants, fuels and essential items of equipment required for satisfactory operation.
750F	FLIGHT VEHICLE POWER 1. All power other than propulsion necessary to operate aerospace vehicles.
760B	SURVEILLANCE TECHNIQUES 1. Detecting and tracking objects and phenomena above the surface of the earth, 2. Recognizing detected objects and phenomena, to identify those which are hostile, and to evaluate the threat posed.
760C	COMMUNICATIONS 1. Atmospheric Communications, 2. Non-radio Communications, 3. Satellite and Space Communications, 4. Communications Theory, Analysis and Techniques.
760D	ELECTROMAGNETIC WARFARE 1. Ferret Reconnaissance Collection and Data Handling, 2. Electromagnetic Countermeasures.

AREA
NUMBER

TITLE



760E

ELECTRONIC TECHNIQUES

1. Advanced Circuit Theory, 2. Bio-Electronics, 3. Electronic Tubes and Components, 4. Molecular Electronics, 5. Electronic Design Techniques.

760F

RECONNAISSANCE

1. Collecting, reducing, analyzing and disseminating reconnaissance data gathered by Photographic, Airborne Radar, Infra-Red and Television Sensors.

760G

ELECTROMAGNETIC VULNERABILITY REDUCTION

1. Interference Measurements, 2. Reduction of Interference Effects, 3. Anti-Jamming Techniques.

760H

INTELLIGENCE TECHNIQUES

1. Machine Data Translation and Processing, 2. Special Collection Techniques.

760K

ELECTROMAGNETIC WAVE TECHNIQUES

1. Electromagnetic Generation, 2. Electromagnetic Radiation, 3. Electromagnetic Propagation, 4. Electromagnetic Interaction with Matter.

770A

AEROSPACE ENVIRONMENT

1. Geodesy and Gravity for Improved Missile Accuracy, 2. Geomagnetism Information for USAF Operations, 3. Geophysical Detection and Surveillance Techniques, 4. Meteorology for Operation of AF Systems, 5. Air Space Properties for Design and Operation of AF Systems, 6. Astronomy for USAF Operations, 7. Lunar and Planetary Exploration.

780A

BIO-LOGISTICS

1. Logistical criteria and means to protect and sustain man in AF flight operations. Includes hazards such as low ambient pressure, hypoxia, temperature extremes, and noxious environments; and the provision of food and water, rest, and disposal of wastes.

780B

BIO-MECHANICS

1. Mechanical criteria and means to protect and sustain man in AF flight operations. Includes hazards such as acceleration sub-gravity and zero-gravity, acoustic energy, escape and survival, and vision.

780E

HUMAN PERFORMANCE

1. Training Equipment, Simulators and Techniques for AF Systems, 2. Selection and Use of Officers and Airmen, 3. Human Performance in AF Systems, 4. Information and Communication for AF Systems.

DATALOG OF MILITARY MISSILES AND SPACE PROJECTS

MILITARY MISSILES, January 1960

★ New information this month

AA—Air-to-Air
AS—Air-to-Surface
AU—Air-to-Underwater

SS—Surface-to-Surface
SA—Surface-to-Air
SU—Surface-to-Underwater
UU—Underwater-to-Underwater

ICBM—Intercontinental Ballistic Missile
IRBM—Intermediate Range Ballistic Missile
ECM—Electronic Countermeasures

ATLAS SM-65 AF

Type: ICBM
prime: Convair
guide: GE/Burroughs/Am. Bosch
power: Rocketdyne

★ Military model now operational. Research model of ATLAS, however, becoming the more important ATLAS vehicle. Convair hopes to make ATLAS the basic work horse of the early space age—comparable to the success Douglas had with the DC-3. With increased reliability ATLAS may very well assume that stature.

AUTOMET Army

Type: SS
No contracts announced.

Proposed solid propellant close support missile. Designed for "shoot and scoot" Army set-up.

ALBM AF

Type: AS
prime: Douglas
guide: Nortronics
power: Aerojet

Test flight made. Douglas now making one model. Martin and McDonnell have contracts also. This bird is IRBM launched from aircraft.

BOMARC IM-99 AF

Type: SA
prime: Boeing
guide: Westinghouse
power: A—Marquardt
B—Thiokol

Model "A" operational but has been receiving criticism. New Model "B" with solid booster expected to be much better.

BULLPUP ASM-N-7 Navy GAM-83 AF

Type: AS
prime: Martin
guide: radio command
Republic
power: Thiokol

Operational with Atlantic and Pacific Fleets. Very simple radio command weapon.

WHITE LANCE GAM-83 is larger model now in development for AF use.

COBRA Navy

Type: ECM
No contracts announced.

Proposed missile to confuse enemy ship-based radar.

CORPORAL SSM-A-17 Army

Type: SS
prime: Firestone
guide: Gilfillan
power: Ryan

Phasing out in favor of SERGEANT.

CORVUS ASM-N-8 Navy

Type: AS
prime: Temco
guide: Texas Instrument
power: Reaction Motors

Std. model is surface devastator to be launched from carrier a/c. New model being dvlpd as countermeasure (ECM) bird. First fired July '59. Tests continuing.

CROSSBOW GAM-67 AF

Type: AS
prime: Radioplane
guide: Nortronics
power: Westinghouse

Being dvlpd as turbojet powered countermeasure missile and for possible air-to-surface devastation use.

EAGLE XAAM-10 Navy

Type: AA
prime: Bendix
guide: Bendix/Sanders
power: not awarded

EAGLE winning out in political battle against GAR-9 FALCON. Navy has high hopes for EAGLE as attack missile launched from carrier a/c appx. 50 miles from target. Provides safety for manned fighters.

FALCON GAR-1, -2, -3, -4, -9, -11 AF

Type: AA
prime: Hughes
guide: Hughes
power: Thiokol

GAR-3 is operational, SUPER FALCON GAR-3 in test. GAR-9 is so different from the other FALCON series that it really should have other name. Radar guided and with nuclear warhead, AF had high hopes for using this larger and heavier FALCON with F-102, F-106 and ill-fated F-108. But GAR-9 FALCON is now being cut back in production. GAR-11 is in R&D.

GENIE MB-1 AF

Type: AA
prime: Douglas
guide: unguided
power: Aerojet

Now being carried by F-89J, F101B and F-106. First operational nuclear warhead air-to-air bird, GENIE is pointed downward at launch, curves up at target. Unguided. Spin-stabilized.

GIMLET Navy

Type: SA
No contracts announced.

This air-launched rocket is said to have high accuracy. Most details, however, are being withheld by Navy.

DATALOG OF MILITARY MISSILES AND SPACE PROJECTS

(2nd Sheet)

MILITARY MISSILES, January 1960

★ New information this month

HAWK SAM-A-18 Army

Type: SA
prime: Raytheon
guide: Raytheon
power: Aerojet

Now operational, will be used by both Army and Marine Corps troops against low-level targets.

HONEST JOHN Army

Type: SS
prime: Douglas
guide: unguided
power: Hercules Powder

Operational with U. S. forces in Europe. Slated for replacement by LITTLE JOHN.

HOUND DOG GAM-77 AF

Type: AS
prime: North American
guide: Autonetics
power: Pratt & Whitney (J52)

★ Few people not closely associated with HOUND DOG realize its true purpose: HOUND DOG is designed to seek out and destroy enemy countermeasure sources, not industrial or conventional military targets. HOUND DOG aids carrying a/c (B-52G) on way to target, not at target.

JUPITER SM-78 Army-AF

Type: SS
prime: Chrysler
guide: Ford Instrument
power: Rocketdyne

Operational with Italian and Turkish troops in Europe. The 864th and 865th squadrons of SAC trained with JUPITER. THOR replacing.

LACROSSE SSM-A-12 Army

Type: SS
prime: Martin
guide: Federal Tel.
power: Thiokol

This weapon is unique in its design to place a very heavy warhead under command guidance on a battlefield target. LACROSSE is under limited production and is operational. Production is being handled by Martin at Orlando.

LITTLE JOHN Army

Type: SS
prime: Emerson Elec.
guide: unguided
power: Allegheny

Designed for "shoot and scoot" operations, LITTLE JOHN will replace HONEST JOHN as an artillery rocket. It will soon be operational.

LULU Navy

Type: AU
No contracts announced.

Air dropped nuclear warhead anti-sub missile is highly classified by Navy. Now undergoing development. No contract announced.

MACE TM-76 AF

Type: SS
prime: Martin
guide: AC Spark/Goodyear
power: Allison (J33-A-41)

Now in W. Germany with U. S. Forces. Choice of two fine guidance systems in this pilotless aircraft gives MACE extraordinary accuracy.

MATADOR TM-61 AF

Type: SS
prime: Martin
guide: Goodyear
power: Allison (J33-A-37)

Production has now ceased in favor of MACE. MATADORS being turned over to West Germans' and Natl. Chinese.

MAULER Army

Type: SA
No contracts announced.

Proposed infra-red guidance anti-air weapon has received no contract.

MINUTEMAN SM-80 AF

Type: ICBM
prime: Boeing
guide: Autonetics
power: Thiokol

Still in development status, MINUTEMAN is expected to become operational solid propellant ICBM (or IRBM in different arrangement of stages) by late 1962 or early 1963. Some trouble has been encountered in the single fixed nozzles of the solid propellant motors.

NIKE-AJAX SAM-A-7 Army

Type: SA
prime: Western Electric
guide: Western Electric
power: Hercules Powder

Now operational in U. S., Europe and Far East. Being replaced by NIKE-HERCULES.

NIKE-HERCULES SAM-A-25 Army

Type: SA
prime: Western Electric
guide: Western Electric
power: Hercules/Thiokol

★ Work continuing rapidly on conversion of NIKE-AJAX sites to NIKE-HERCULES. This fine weapons system appears slated for long retention in our anti-aircraft protection system.

NIKE-ZEUS Army

Type: SA
prime: Western Electric
guide: Bell Telephone
power: Grand Central Rocket

★ The NIKE-ZEUS anti-missile system is the most effective enemy missile destructor we now have at current state of the art. Altho still plagued with difficulties in reliability, NIKE-ZEUS is proceeding to operational status rapidly. Funding still high.

PERSHING Army

Type: SS
prime: Martin
guide: Bendix
power: Thiokol

This surface-to-surface MRBM is very slim, delicate looking, which makes it of great contrast in appearance to the thicker JUPITER it is designed to replace. Testing of the solid propellant PERSHING is scheduled to begin shortly at Cape Canaveral.

DATALOG OF MILITARY MISSILES AND SPACE PROJECTS**MILITARY MISSILES, January 1960**★ *New information this month***POLARIS FBM Navy**

Type: US-SS
 prime: Lockheed
 guide: GE
 power: Aerojet

Original dreams of 1500 mile range now cut to 900. Progress fairly good altho envisioned operational date of late 1960 now appears optimistic. Designed for launching from both submerged vessels and surface ships, POLARIS is first U. S. designed underwater-to-surface missile. Germans, by the way, had a prototype underwater-to-surface missile working back in WWII.

QUAIL GAM-72 AF

Type: AS-ECM
 prime: McDonnell
 guide: radio command
 power: GE (J85)

Air-launched diversionary missile of extreme sophistication and complexity is valuable aid in protection of SAC bombers. Costly QUAIL, also called GREEN QUAIL, is being readied for test flights in near future.

RAVEN XASM-9 Navy

Type: AS
 No contracts announced.

Proposed air-to-surface 500-mile range missile now under study. No contract.

REDEYE ARMY

Type: SA
 prime: Convair
 guide: Convair
 power: Atlantic Research

Lightweight (20 lb.) infra-red guided bazooka-type missile well along in testing. Army has high hopes for this relatively inexpensive and effective easily-carried guided missile that can be fired from a soldier's shoulder. It is the smallest missile ever manufactured by Convair for Defense use.

REDSTONE SSM-A-14 Army

Type: SS
 prime: Chrysler
 guide: Ford Instrument
 power: Rocketdyne

Now operational with U. S. troops in Europe. A very heavy and impressive looking missile, REDSTONE has high reliability and 200-mile range.

REGULUS I SSM-N-8 Navy

Type: SS
 prime: Chance Vought
 guide: AC Spark Plug
 power: Allison (J33)

Although cut in production, REGULUS I is aboard some ships and subs of the U. S. fleet and is operational. Biggest news with REG I, however, is not its current Navy dress but the fact that it has been used in "missile mail" tests by the Post Office Dept. which may do more procurement of missiles for postal delivery test and evaluation.

REGULUS II SSM-N-9A Navy

Type: SS
 prime: Chance Vought
 guide: Stavid/Sperry/AC
 power: GE (J79)

Much more powerful and larger version of REGULUS I, REG II has also been cut from Navy funding but also is being eyed by Post Office Department as speedy ("beyond Mach 2") missile mail carrier that could fly in any weather.

SERGEANT SSM-A-27 Army

Type: SS
 prime: Sperry
 guide: Sperry
 power: Thiokol

Easily assembled in field in about 11 minutes, smaller, more flexible solid propellant SERGEANT is now in production to replace Army's CORPORAL. Nearly operational.

SHILLELAGH Army

Type: SS
 prime: Aeronutronics
 guide: Aeronutronics
 power: Picatinny Arsenal

Lightweight missile designed for close-in support of troops. In one application the SHILLELAGH is vehicle mounted. It is designed to be effective weapon against armor, troops and field fortifications. Expected to become operational in mid-1960's.

SIDEWINDER AAM-N-7 Navy GAR-8 AF

Type: AA
 prime: Philco
 guide: Philco/GE
 power: Hercules Powder

Extremely popular infra-red homing missile is simple and rugged. SIDEWINDER-1C is advanced model with higher speed and greater range. Advanced model is in test. Earlier model is operational. Both AF and Navy use SIDEWINDER.

SLAM AF

Type: SS
 No contracts announced.
 In study.

SNARK SM-62 AF

Type: SS
 prime: Northrop
 guide: Northrop
 power: Pratt & Whitney (J57)

Highly reliable guided winged missile. Subsonic. Operational with AF unit at Presque Isle, Maine.

SPARROW AAM-N-2, -3, -6 Navy

Type: AA
 prime: Raytheon
 guide: Raytheon
 power: Aerojet

SPARROW III, only one of the SPARROW family now operational, will soon be cancelled from further production. SPARROW III was planned for use on cut F8U-3 and F3H a/c, will still see further use on other fleet a/c including new McDonnell F4H.

DATALOG OF MILITARY MISSILES AND SPACE PROJECTS

(4th Sheet)

MILITARY MISSILES, January 1960

★ New information this month

SUBROC Navy

Type: SU-UU
prime: Goodyear
guide: Librascope/Kearfott
power: Thiokol

This complex weapons system is launched through a torpedo tube of a submarine or surface vessel. Rising, it flies from 25 to 50 miles through the air, then re-enters the water and homes on its submerged target. Key to perfection of the system is reliability and range of built-in sonar equipment. Work is now continuing along that line.

TALOS SAM-N-6 Navy

Type: SA
prime: Bendix
guide: RCA/Sperry
power: McDonnell

Unique in its integral ram-jet body, TALOS is now operational aboard the guided missile cruiser GALVESTON. A new SUPER TALOS is in planning as a possible anti-missile missile for Navy use.

TARTAR Navy

Type: SA
prime: Convair
guide: Sperry
power: Aerojet

A miniaturized TERRIER that has performance equal to the larger bird, TARTAR is a 950-lb. beam rider. TARTAR is scheduled to be operational in 1960. Test firings now going on in Pacific waters.

TERRIER SAM-N-7 Navy

Type: SA
prime: Convair
guide: Sperry
power: Allegheny

Beam riding missile for use on larger surface ships, TERRIER is operational with the fleet.

THOR SM-75 AF

Type: IRBM
prime: Douglas
guide: AC Spark Plug
power: Rocketdyne

Out of 50 launchings to date, THOR has had 33

successful firings. Now operational, THOR missiles have been sent to the U. K. where they now form 4 units of the Royal Air Force Bomber Command. In its role as a research vehicle, THOR has served as an effective first stage booster, most capably shown in the THOR-ABLE lunar probe combo.

TITAN SM-68 AF

Type: ICBM
prime: Martin
guide: Bell/Am. Bosch/Rem. Rand
power: Aerojet

More sophisticated than ATLAS, ignition of the second stage of TITAN takes place in outer space. Only 1 failure out of 5 launchings to date, TITAN is scheduled for operational use about Jan. 1961. TITAN is designed for underground storage and launch.

WAGTAIL AF

Type: AS
prime: Minn-Honeywell
guide: Minn-Honeywell
power: not releasable

This remarkable rocket will be able to follow contours of terrain and change speed in flight. WAGTAIL has been successfully sled-tested.

WEAPON ABLE Navy

Type: SU
No contracts released.
BuOrd "in-house"

Operational with the fleet, WEAPON ABLE is rocket-powered depth charge now installed on destroyer escorts and class 931 frigates.

ZUNI Navy

Type: AS
No contracts released.
NOTS produced.

Operational with carrier based a/c, ZUNI is a folding fin all-weather unguided rocket carried in multiple units. The Douglas AD a/c carry 48 ZUNIs below their wings on combat missions. The weapon is effective against pill-boxes, tanks, gun emplacements and small ships.

SPACE PROJECTS, January 1960

AGENA ARPA

Type: Liquid-fueled Upper Stage
prime: Bell Aircraft
Obj: AGENA will be useable as a second stage to ATLAS and THOR missiles. It incorporates a Bell rocket engine similar to that used previously in the HUSTLER vehicle. The AGENA upper stage is used in DISCOVERER, MIDAS and other projects. AGENA and SATURN are part of PROJECT TRIBE.

ATLAS-ABLE NASA

Type: Large Booster
prime: Convair/Space Tech Labs
guide: GE/Burroughs/Am. Bosch
power: Rocketdyne/Aerojet
Obj: Designed to orbit 200-lb. satellite around moon.

Initial shot in November failed. Similar shots now delayed until late 1960. However, plans now underway for more ATLAS-ABLE vehicles. Much interest in ATLAS-ABLE combo.

BALLISTIC MISSILE DEFENSE BMEWS AF

Type: Ballistic Missile Defense Radar System
prime: RCA
Obj: Ballistic Missile Early Warning System designed for 40-minute notice of approaching enemy ICBMs.

System to cost around \$700 million. Two units ready, one more building. Works with SAGE.

ESAR ARPA

Type: Advanced Warning Radar
prime: Bendix
Obj: Electronically Steerable Array Radar is designed for ground installation to warn of approaching enemy missiles. Multiplicity of individual cells will give more flexibility than other systems of steerable radar.

DATALOG OF MILITARY MISSILES AND SPACE PROJECTS

SPACE PROJECTS, January 1960

★ New information this month

PINCUSHION ARPA

Type: Advanced Radar
 prime: Raytheon
 Obj: PINCUSHION is a many-frequency radar installation to be located on Kwajalein in the Marshall Islands, initially, as an early warning radar of a more variable type than TRADEX or ESAR.

TRADEX ARPA

Type: Advanced Radar
 Prime: RCA
 Obj: TRADEX is a modification of the radar types recently designed for BMEWS (Ballistic Missile Early Warning System). It should have better range.

CENTAUR NASA

Type: Soft-Land Moon Vehicle
 prime: Convair
 power: P&W/JPL
 Obj: Designed to land 730-lb. payload on moon in soft landing.

A new liquid hydrogen engine is being dvlpd for the upper stage of this ATLAS-boosted vehicle. New JPL engine will have 6000-lbs. thrust.

COURIER ARPA (Army)

Type: Communications Satellite
 prime: not announced
 Obj: Designed to be delayed repeater satellite, part of PROJECT NOTUS.

Primarily in-house project. FY 59 funding: \$3 million.

DECREE ARPA (Army)

Type: Global Communications Satellite
 prime: no contracts announced
 Obj: Designed to be global communications system with satellite repeaters remaining stationary distances from each other.

Part of NOTUS, will be transferred from ARPA to Army eventually.

PROJECT DEFENDER ARPA

Obj: Ballistic Missile Defense
 ESAR, TRADEX and PINCUSHION are only part of the entire ballistic missile defense program of ARPA. The GLIPAR studies, (Guide Line Identification Program for Anti-Missile Research) is also a part of Project DEFENDER.

PROJECT DISCOVERER AF

Type: Stabilized Satellites
 Obj: (a) Achieve orbital capabilities of large satellite vehicles.
 (b) Dvlp techniques and data for operational military satellite systems.
 (c) Recover by use of suitable re-entry capsule for biomedical and other studies.
 (d) Execute nonrecoverable advanced engineering tests.
 (e) Such other objectives as may be directed.

Tasks: DISCOVERER satellites

Prime: Lockheed

Has achieved orbital capabilities and has made successful re-entries. Ejected capsules have not been recovered.

MIDAS Satellites

Prime: Lockheed

In R&D, Early Warning Satellite dvlpd to spot enemy ICBM launchings by infra-red.

SAMOS Satellites

Prime: Lockheed

Originally called SENTRY, first launching scheduled for March 1960.

DYNA-SOAR I AF

Type: Boost-Glide Orbiting Vehicle
 prime: Boeing/Bell/Martin competing
 guide: not announced
 power: not announced
 Obj: Will attempt to put manned glider into orbit for pilot to return.

Competition is underway between Boeing, Bell and Martin for contract to produce. Each has made proposals under study. Project soon to enter R&D from study stage.

PROJECT ECHO NASA

type: Inflatable Satellites
 Obj: Global communications experiment.

★ NASA will launch huge inflatable spheres into orbit 1000 miles above the earth and invite scientists around the world to bounce radio signals off the aluminum-coated spheres, each as tall as a 10-story building. ECHO spheres will be launched from Cape Canaveral, Fla. in spring 1960, possibly in March. Launching vehicle will be THOR-DELTA.

GLIPAR ARPA

Type: Study Group for Missile Defense
 Obj: Designed to work on future ICBM defense. Called upon by DEFENDER and LONGSIGHT.

JUNO II NASA

Type: Large Booster
 prime: Chrysler
 guide: Ford Instrument
 power: Rocketdyne/JPL
 Obj: Attempts to put small payloads deep in space.

Five more JUNOs will be fired.

PROJECT LONGSIGHT ARPA

Type: Study System in Missile/Space Field
 Obj: Recommendations as to projects which should be initiated to satisfy future military requirements. GLIPAR (Guide Line Identification Program for Anti-Missile Research) which was initiated. GLIPAR is now used by both LONGSIGHT and DEFENDER. LONGSIGHT more advanced than DEFENDER.

MERCURY NASA

Type: Manned Satellite
 prime: McDonnell
 guide: not announced
 power: ATLAS (Rocketdyne)
 Obj: Will attempt to put man in brief orbit, then parachute him in capsule safely to earth.

★ Most MERCURY activity currently centers around astronaut training. Capsules have been received from McDonnell and unmanned test firings have been made with LITTLE JOE and REDSTONE vehicles. Recent tests with monkey successful.

MIDAS WS 117L AF (Via ARPA)

Type: Early Warning Satellite
 prime: Lockheed
 Obj: Infrared sensing of enemy ICBM launchings.

Also part of the original SENTRY program and now handled in the DISCOVERER series. MIDAS has been initiated to dvlp an early warning system of defense against ICBMs wherein the heat from the missile motors is detected at time of launch. Infra-red detection is used. Still in dvlpmt.

DATALOG OF MILITARY MISSILES AND SPACE PROJECTS

(6th Sheet)

SPACE PROJECTS, January 1960

★ New information this month

MRS. V ARPA

Type: Maneuverable, Recoverable Manned Space Vehicle
 prime: no contract announced
 guide: no contract announced
 power: no contract announced
 Obj: Will attempt to place manned vehicle in orbit, then maneuver out of original orbit in space, then return safely to earth.

This project is also known as DYNA-SOAR II. Vehicle will weigh in excess of 20,000 lbs. Launch may be from or in space. Although far from current state of art, MRS. V will be pushed by ARPA to receive substantial funding in 1960 because of its high importance.

NOVA NASA

Type: Large Booster
 prime: Rocketdyne
 power: Rocketdyne
 Obj: Will build 6 million lb. thrust booster for Outer Space Vehicles

Rocketdyne's 1.5 million lb. thrust engine is heart of this system. NOVA will be cluster of 4 such engines. Engine in early dvlpmnt now.

NOVA is designed to carry 1-ton load to moon and back; 7500 lbs. to Mars with 750-lb. return load. Nuclear version would take 27 tons to Mars, bring 12 tons back.

ORION ARPA

Type: Rocket propelled by nuclear pulses
 prime: General Atomic
 Obj: Nuclear powered Outer Space Vehicle

Work was undertaken in July '58 by Gen. Atomics Div. of General Dynamics under a \$1 million contract with ARDC. An additional \$400,000 was authorized by ARPA at end of year for continuation of study. In Aug. '59 another \$1 million for continuation of nuclear pulse rocket studies was authorized. Still in drawing board stages.

PRINCIPIA ARPA

Type: Solid Propellants
 prime: no contracts announced
 Obj: Dvlping new solid propellants with 10-20 percent higher specific impulses.

PONTUS ARPA

Type: Material Research
 prime: no contracts announced
 Obj: Experimentation and dvlpmnt of better structural and power conversion mats for military requirements in surface, air and missile programs.

SAMOS WS 117L AF (via ARPA)

Type: Reconnaissance Satellite
 prime: Lockheed
 Obj: TV Satellite

Originally called SENTRY, the SAMOS is part of the DISCOVERER series designed to be a "Peeping Tom" on enemy military capabilities. It is scheduled for initial launch in March 1960.

SATURN NASA

Type: Large Booster
 prime: Convair
 power: Pratt & Whitney
 Obj: Clustered 1.5 million lb. thrust booster for Outer Space Vehicles.

Recently transferred from Army to NASA control along with Von Braun and SATURN project officers and tech people. SATURN with two stages above it—probably TITAN and CENTAUR—could send 20,000 lbs. to moon or put heavy probe deep in space. First launchings are scheduled to be in early 1963.

SCOUT NASA

Type: Four-stage Satellite Launch Vehicle
 prime: Chance Vought
 guide: Minn-Honeywell
 power: Aerojet/Allegany/Thiokol
 Obj: Designed to place 200-300 lb. satellites in orbit.

SCOUT is now in late stages of dvlpmnt, expected to be operational abt March 1960.

SHEPARD ARPA

Type: Tracking Satellite
 prime: no contracts announced
 Obj: Tracking and data reduction

STEER ARPA

Type: Communications Satellite
 prime: Bendix
 Obj: Destined to serve the Strategic Air Command for communications purposes, STEER is part of the NOTUS project. STEER will be launched in a polar orbit. Still in R&D. Army will dvlp the satellite, AF will launch it.

SUZANO ARPA

Type: Space Platform
 prime: no contracts announced
 Obj: Designed to provide space platform for assembling Outer Space Vehicles, and to be used as a springboard base for advanced space missions.

Altho no funding has yet been advocated for this space platform, SUZANO is a definite necessity and will surely be a reality. Initially the project assignment will be directed toward the demonstration of the feasibility of such an operational space base. SUZANO is now in study stage.

THOR-ABLE NASA

Type: Large Booster
 prime: Douglas/Space Tech Labs
 guide: GE
 power: Rocketdyne/Aerojet
 Obj: Designed for deep space probes of lighter payloads than ATLAS-ABLE.

Good reliability has been had with this combination. Uses continuing for putting probes deep in space and for moon and sun orbit shots.

THOR-DELTA NASA

Type: Satellite Launching Vehicle
 prime: Space Tech Lab
 guide: ITT
 power: Aerojet/Allegany
 Obj: Designed to put small satellites (50-80 lbs.) into orbit around moon.

First flights scheduled for early 1960.

DATALOG OF MILITARY MISSILES AND SPACE PROJECTS**SPACE PROJECTS, January 1960**★ *New information this month***TIROS NASA**

Type: Meteorological Satellite
 prime: RCA
 Obj: Designed to take television pictures of cloud formations and frontal systems.

TIROS promises to give more revelations about nature of weather. Army Signal R&D Labs at Fort Monmouth involved in initial planning. Navy is also fostering TIROS. Shot is planned for mid-year 1960.

PROJECT TRANSIT ARPA

Obj: Astro-Geodetic Navigation Satellite

PROJECT TRANSIT is a research, experimentation and systems dvlpmnt designed to obtain astro-geodetic navigation capabilities based on satellite or other space vehicle applications and capable of satisfying the operational requirements of the military services. Navy will receive this project from ARPA in future. The Applied Physics Lab of Johns Hopkins has a study contract now on TRANSIT.

PROJECT TRIBE ARPA

Obj: Outer Space Vehicles

PROJECT TRIBE is a research, experimentation and systems dvlpmnt designed to obtain at the earliest practical date a continuing family of military space vehicles capable of satisfying the needs for space missions as may be determined by Secretary of Defense from time to time. Guidance, stabilization and

control components necessary to satisfactory performance of the vehicles shall be included in the scope of this assignment. The SATURN Task and AGENA Task are part of Project TRIBE.

VEGA NASA

Type: Solar System Probe Vehicle
 prime: Convair/JPL
 guide: GE
 power: Rocketdyne/GE/JPL
 Obj: Designed to probe moon, Mars and Venus.

VEGA was being built to be able to send 1000 lbs. to Mars; 6000 lbs. in earth orbit. The project was cancelled 11 December 1959.

VELA ARPA

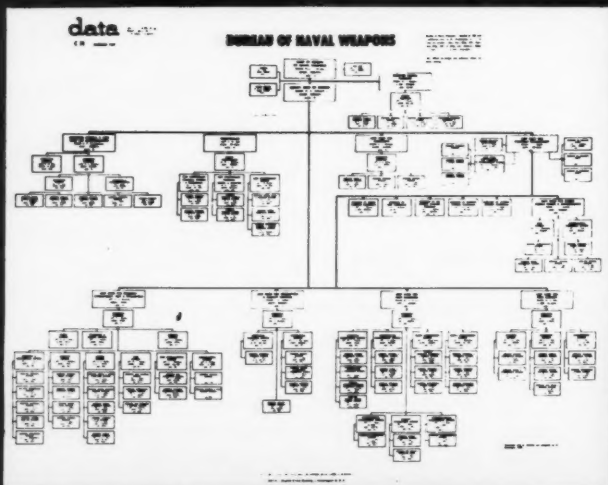
Obj: Research, experimentation and systems dvlpmnt related to the nuclear test moratorium.

★ Working on nuclear test band discrimination.

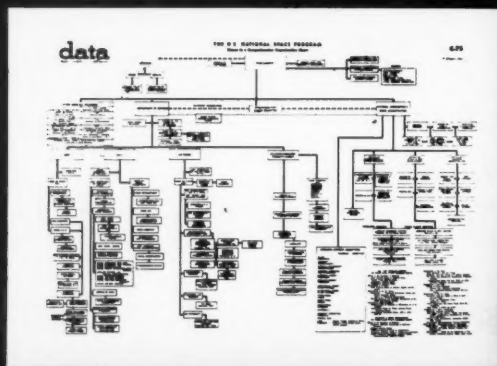
X-15 AF/Navy/NASA

Type: Rocket-Powered Manned Aircraft
 prime: North American
 power: Thiokol
 Obj: Designed to take man in controllable a/c to fringes of outer space—100,000-ft. altitude, at speed of Mach 5 (better than 3600 mph.).

Drop tests and partial power tests have been successful. Recently, however, plane broke its back on rough landing. No injuries to pilot, Scott Crossfield. Rebuilding, studies and tests continuing.

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* Revised this listing

** New offer this listing.

DATAGRAF Reader Service

DATA Publications

Dupont Circle Building, Washington, D. C.

GENTLEMEN:

- ☐ Please send me the items I have checked above.
☐ Please enter a new subscription to DATA's monthly magazine for the addressee listed below. (12 issues for \$12 per year).

☐ Payment Enclosed ☐ Bill Me ☐ Bill Company

On Bill-Later Orders postage is added.

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HERE'S THE KEY TO DOD!



data daily

DATA DAILY from DOD began in May 1957 on a limited basis when the Department of Defense discontinued mailing their releases. The Defense releases are now available at the military information releasing offices in the Pentagon and anyone who wants a copy of each release can pick them up there. But trips into Arlington are both time consuming and expensive, so DOD began providing DATA with a set number of copies of each release for a restricted number of DATA DAILY subscribers. DATA, in turn, mails these releases and maintains a mailing list at no expense to the Government.

DATA DAILY has worked out well for both DOD and the select list of Washington representatives, corporation executives, editors and news men who need to keep ahead of the headlines

and the technical press by having all releases of the Department of Defense on their desks every morning.

DATA DAILY is now expanding scope and service. More copies of more releases have been made available for more DATA Daily subscribers. We can now invite more people to become DATA DAILY clientele.

We invite you to try DATA DAILY service for a month and be convinced of its value.

\$20 per month.

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No additional charge for postage unless air mail or special delivery is desired. All Data Daily subscribers also receive copies of monthly DATA Magazine at no extra charge.

DATA DAILY • Dupont Circle Building • Washington 6, D. C.

DATA ERRATA

In September 1959 DATA PUBLICATIONS initiated a new service for Defense-Industry contractors who had a need to keep close contact with a given Government activity. This service was tagged DATA ERRATA.

For the initial activity covered by DATA ERRATA, subscribers, through their letters, selected OSD R&E (Office of the Secretary of Defense, Director of Research & Engineering).

For \$10 a month, subscribers to DATA ERRATA Nbr. 1, covering OSD R&E, now receive (1) a special news-letter giving news of happenings as they occur in this Defense activity, (2) phone and room listings of personnel of the activity with constant revisions of these lists as changes occur, (3) special personality resumes of the key personnel of the activity including their approach to new concepts, hobbies, etc., (4) frequently revised DATAGRAF-type charts with automatic replacement of outdated charts by new ones, eliminating the subscribers need to place reorders.

It all adds up to flawless coverage of a given Government activity including the providing of a special expandable file folder to hold the biographies, personality appraisals, charts, newsletters, phone lists, etc., which are sent regularly to DATA ERRATA subscribers.

DATA ERRATA DE-1 subscribers now include *ACF Industries, Aeronutronic Division of Ford, Autonetics, Burroughs, Chance Vought, Chrysler, General Electric, Grumman, Martin, North American Aviation, Polytechnic R&D Co., Ramo-Wooldridge, Space Tech. Labs, Western Electric*, and others that use DATA ERRATA to do their leg-work.

Since the initiating of DE-1 OSD R&E in September, the project has been an outstanding success. We have received good cooperation from OSD R&E and have received glowing letters of satisfaction from subscribers.

We are therefore, now, initiating a new DATA ERRATA service:

DE-2 THE ADVANCED RESEARCH PROJECTS AGENCY

We have been promised full cooperation from the new activity above and welcome subscribers' inquiries.

DATA ERRATA service is \$10 per month, six months payable in advance, with money guaranteed refunded if not satisfied after the first month of service.

DE-1 OSD R&E
DE-2 ARPA

DATA ERRATA
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DATA 1960 SCHEDULE

JANUARY 1960

AIR RESEARCH & DEVELOPMENT COMMAND

Deadline for advertisements: 20 December 1959

FEBRUARY 1960

NAVY BUREAU OF NAVAL WEAPONS

Deadline for advertisements: 11 January 1960

MARCH 1960

**NATIONAL AERONAUTICS & SPACE
ADMINISTRATION**

Deadline for advertisements: 8 February 1960

APRIL 1960

NAVY SUPPLY SYSTEM

Deadline for advertisements: 7 March 1960

MAY 1960

ARMY ORDNANCE CORPS

Deadline for advertisements: 11 April 1960

JUNE 1960

AF AIR MATERIEL COMMAND

Deadline for advertisements: 9 May 1960

JULY 1960

**NAVY ANTI-SUBMARINE WARFARE
PROGRAM**

Deadline for advertisements: 6 June 1960

AUGUST 1960

NAVY ASTRONAUTICS PROGRAM

Deadline for advertisements: 5 July 1960

SEPTEMBER 1960

ARMY SIGNAL CORPS

Deadline for advertisements: 1 August 1960

OCTOBER 1960

**ARMY RESEARCH & DEVELOPMENT
PROGRAM**

Deadline for advertisements: 5 September 1960

NOVEMBER 1960

MUTUAL SECURITY (ICA) PROGRAM

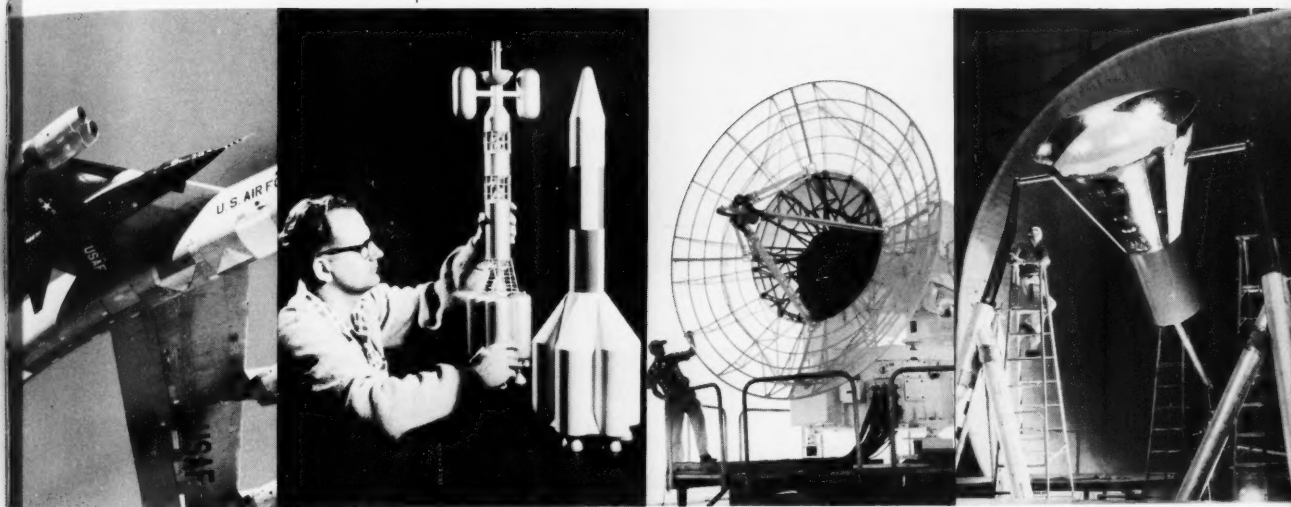
Deadline for advertisements: 3 October 1960

DECEMBER 1960

THE DEPARTMENT OF DEFENSE

Deadline for advertisements: 31 October 1960

NASA



MARCH 1960 ISSUE OF DATA

NASA! Spending over \$500 million in fiscal 1960, the National Aeronautics and Space Administration has become the Giant among giant Government agencies vying for space exploration laurels. Since its inception on 1 October 1958, NASA has racked up an impressive record of accomplishments and has become a storehouse of fabulous potential space power.

Bearing little resemblance to the former National Advisory Committee for Aeronautics from which it was created, in the short 15 months it has been in existence NASA has left the Advanced Research Projects Agency hanging on the ropes in a pulverized mass after the brief ARPA vs. NASA competition last year, has taken the entire SATURN Project along with Der Herr Doktor Von Braun and his staff away from the "Rape"-shouting Army missile-men, and now finds itself in charge of all the LARGE BOOSTER projects of the United States.

NASA! The inventory of space hardware controlled by this new Government Giant is staggering. MERCURY! SATURN! JUNO II! NOVA! SCOUT! — Oh yes! and a main stockholder in the X-15 project.

Because NASA will unquestionably be the greatest sinew of strength in our national space arm for the decades to come, DATA is preparing a special reference book on this activity for the use of our regular Defense and Industry subscribers, key Government executives and Military Commanders. Paul Haney of NASA is the activity project officer, Harold Helfer of DATA will be the liaison and main copywriter and Martin Caidin of DATA will present the feature editorial. That's NASA in the March 1960 issue of DATA . . . Don't miss it.



*Closing date for advertising commitments:
8 February 1960.*

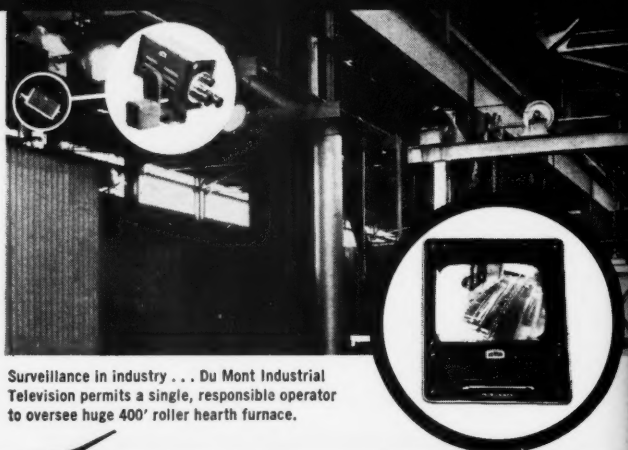
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DU MONT Precision Electronics At Work . . . in **SURVEILLANCE**

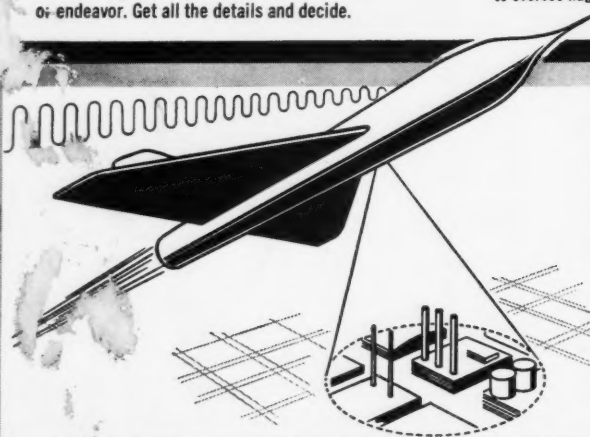
FOR INDUSTRY...

Surveillance — an all-important part of supervision and control in business, industry and science today. Du Mont Industrial Television is employed in hundreds of installations throughout the country, and proving its performance, savings and reliability every day. Factories, banks, railroads, super-highways, chemical processes and hospitals are but a few of the applications for saving money and time of personnel.

Du Mont Industrial Television affords complete versatility for expansion or modification at any time. The equipment is sold, installed and serviced by local, competent, factory-trained contractors in all major market areas. Chances are Du Mont Industrial Television can do exactly what you want in your business or endeavor. Get all the details and decide.



Surveillance in industry . . . Du Mont Industrial Television permits a single, responsible operator to oversee huge 400' roller hearth furnace.



FOR THE MILITARY...

Du Mont Military Electronic Operations specializes in television systems to meet military needs. Miniaturized and ruggedized systems employing image orthicons, vidicons, and dissectors are being designed or produced for applications from underwater to space. Typical Du Mont systems are capable of operation under starlight conditions or for providing extremely high resolution (8000 lines).

Du Mont Military Electronics offers the capabilities of five systems laboratory groups, all integrated for concept, design and development of surveillance systems. Precise and skilled production facilities assure delivery of approved equipment on schedule.

Inquiries are invited . . .

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